

## SEQUENCE LISTING

<110> Tang, Y. Tom  
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Ren, Feiyan  
Chen, Rui-hong  
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Yang, Yonghong  
Wehrman, Tom  
Wang, Jian-Rui  
Ma, Yunqing  
Wang, Dunrui  
Tillinghast, John  
Drmanac, Radoje T.

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Cys Pro Lys Asp Trp Glu Phe Tyr Gln Ala Arg Cys Phe Phe Leu Ser				
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Val Lys Ile Ser Trp Gly Gln Gly His Phe Trp Glu Leu Trp Arg Ser		
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925 930 935 940	
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Cys His Ser Phe Pro Pro Gly Asp Leu Leu Phe Val Lys Lys Phe Gln	
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Arg Glu Gly Leu Pro Pro Ala Trp Lys Arg Pro His Thr Val Ile Thr	
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Met Pro Thr Ala Leu Lys Val Asp Gly Ile Pro Ala Trp Ile His His	
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Ser Arg Ile Lys Lys Ala Asn Arg Ala Gln Leu Glu Thr Trp Val Pro	
151 156 161 166	
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Arg Ala Gly Ser Gly Pro Leu Lys Leu His Leu Ser Trp Val Lys Pro	
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acggggatgc taaggacacg gtcagtggat tatcgtgact gtacta atg aaa gga 355  
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Cys Ser Pro Ile Leu Arg Lys Arg Ser Arg Ser Pro Thr Pro Gln Asn  
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cag gac gga gac acc atg gtg gag aag ggc tca gat cac tcc tcg gac 499  
Gln Asp Gly Asp Thr Met Val Glu Lys Gly Ser Asp His Ser Ser Asp  
36 41 46 51

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Lys Ser Pro Ser Thr Pro Glu Gln Gly Val Gln Arg Ser Cys Ser Ser  
52 57 62 67

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Gln Ser Gly Arg Ser Gly Gly Lys Asn Ser Lys Lys Ser Gln Ser Trp  
68 73 78 83

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Tyr Asn Val Leu Ser Pro Thr Tyr Lys Gln Arg Asn Glu Asp Phe Arg  
84 89 94 99

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Lys Leu Phe Lys Gln Leu Pro Asp Thr Glu Arg Leu Ile Val Asp Tyr  
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Ser Cys Ala Leu Gln Arg Asp Ile Leu Leu Gln Gly Arg Leu Tyr Leu  
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Ser Glu Asn Trp Ile Cys Phe Tyr Ser Asn Ile Phe Arg Trp Glu Thr  
132 137 142 147

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148 153 158 163

aca gct cgc ctc att ccc aac gcc atc caa gtt tgc act gat tca gaa 883

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Lys	His	Phe	Phe	Thr	Ser	Phe	Gly	Ala	Arg	Asp	Arg	Thr	Tyr	Met	Met	
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Met	Phe	Arg	Leu	Trp	Gln	Asn	Ala	Leu	Leu	Glu	Lys	Pro	Leu	Cys	Pro	
196					201					206					211	
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212					217					222					227	
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244					249					254					259	
gac	agc	tca	tcc	aag	agc	agc	ata	gag	acc	aag	cca	gat	gcc	agt	cca	1171
Asp	Ser	Ser	Ser	Lys	Ser	Ser	Ile	Glu	Thr	Lys	Pro	Asp	Ala	Ser	Pro	
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cag	ctg	ccc	aag	aaa	tcc	atc	acc	aac	agc	aca	cta	aca	tcc	aca	ggg	1219
Gln	Leu	Pro	Lys	Lys	Ser	Ile	Thr	Asn	Ser	Thr	Leu	Thr	Ser	Thr	Gly	
276					281					286					291	
agc	agt	gag	gcc	ccc	gtc	tcg	ttt	gat	ggg	ctg	ccc	ctg	gag	gaa	gag	1267
Ser	Ser	Glu	Ala	Pro	Val	Ser	Phe	Asp	Gly	Leu	Pro	Leu	Glu	Glu	Glu	
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gcg	ctg	gag	gga	gac	ggg	tcc	ctg	gaa	aag	gag	ctc	gcc	att	gac	aac	1315
Ala	Leu	Glu	Gly	Asp	Gly	Ser	Leu	Glu	Lys	Glu	Leu	Ala	Ile	Asp	Asn	
308					313					318					323	
atc	atg	ggg	gag	aag	att	gag	atg	atc	gct	cct	gtg	aac	tcc	cct	tca	1363
Ile	Met	Gly	Glu	Lys	Ile	Glu	Met	Ile	Ala	Pro	Val	Asn	Ser	Pro	Ser	
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ctg	gac	ttc	aat	gac	aat	gag	gac	atc	ccc	act	gag	ctc	agt	gac	tct	1411
Leu	Asp	Phe	Asn	Asp	Asn	Glu	Asp	Ile	Pro	Thr	Glu	Leu	Ser	Asp	Ser	
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Ser	Asp	Thr	His	Asp	Glu	Gly	Glu	Val	Gln	Ala	Phe	Tyr	Glu	Asp	Leu	
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Ser	Gly	Arg	Gln	Tyr	Val	Asn	Glu	Val	Phe	Asn	Phe	Ser	Val	Asp	Lys	
372					377					382					387	
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gag cag cgg cgc ttc tct gat atc atc ttc cat cca tgg aaa aag gag				1603
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404	409	414	419	
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Glu Asn Gly Asn Gln Ser Arg Val Ile Leu Tyr Thr Ile Thr Leu Thr				
420	425	430	435	
aac cct ctg gct ccc aaa act gcc act gtc agg gag aca cag acc atg				1699
Asn Pro Leu Ala Pro Lys Thr Ala Thr Val Arg Glu Thr Gln Thr Met				
436	441	446	451	
tac aag gcg agc cag gag agt gaa tgt tac gtg ata gat gcc gaa gtc				1747
Tyr Lys Ala Ser Gln Glu Ser Glu Cys Tyr Val Ile Asp Ala Glu Val				
452	457	462	467	
ctc acc cac gac gtg ccc tac cat gac tac ttt tac aca atc aat cgc				1795
Leu Thr His Asp Val Pro Tyr His Asp Tyr Phe Tyr Thr Ile Asn Arg				
468	473	478	483	
tac acg ctc acc cgt gtg gct cgg aac aag agc cga ctc agg gtc tcc				1843
Tyr Thr Leu Thr Arg Val Ala Arg Asn Lys Ser Arg Leu Arg Val Ser				
484	489	494	499	
aca gag ctg cgc tat cga aaa cag ccc tgg ggg tta gtg aaa acg ttc				1891
Thr Glu Leu Arg Tyr Arg Lys Gln Pro Trp Gly Leu Val Lys Thr Phe				
500	505	510	515	
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Ile Glu Lys Asn Phe Trp Ser Gly Leu Glu Asp Tyr Phe Arg His Leu				
516	521	526	531	
gag agc gag ctg gcc aaa acg gag agc act tat ttg gct gag atg cac				1987
Glu Ser Glu Leu Ala Lys Thr Glu Ser Thr Tyr Leu Ala Glu Met His				
532	537	542	547	
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Arg Gln Ser Pro Lys Glu Lys Ala Ser Lys Thr Thr Thr Val Arg Arg				
548	553	558	563	
agg aag cgt ccc cat gcc cac ctg cga gtc cct cac ctg gaa gag gtg				2083
Arg Lys Arg Pro His Ala His Leu Arg Val Pro His Leu Glu Glu Val				
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atg agc ccg gtc acc acg ccc aca gat gag gat gtg ggc cac agg atc				2131
Met Ser Pro Val Thr Thr Pro Thr Asp Glu Asp Val Gly His Arg Ile				
580	585	590	595	
aaa cat gtg gca ggt tcc aca cag acg cgg cat atc ccg gag gac acc				2179
Lys His Val Ala Gly Ser Thr Gln Thr Arg His Ile Pro Glu Asp Thr				
596	601	606	611	
ccc aac ggt ttc cac ctg cag agc gtg tcc aag ctg ctg ctg gtt atc				2227
Pro Asn Gly Phe His Leu Gln Ser Val Ser Lys Leu Leu Leu Val Ile				
612	617	622	627	

212	217	222	227	
ctg acc agt gat gac gag gac tac gtg ccc cct gac gac gac ttc aac				1075
Leu Thr Ser Asp Asp Glu Asp Tyr Val Pro Pro Asp Asp Asp Phe Asn				
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Thr Met Gly Tyr Cys Glu Glu Ile Pro Val Glu Glu Asn Glu Val Asn				
244	249	254	259	
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Asp Ser Ser Ser Lys Ser Ser Ile Glu Thr Lys Pro Asp Ala Ser Pro				
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Gln Leu Pro Lys Lys Ser Ile Thr Asn Ser Thr Leu Thr Ser Thr Gly				
276	281	286	291	
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Ser Ser Glu Ala Pro Val Ser Phe Asp Gly Leu Pro Leu Glu Glu Glu				
292	297	302	307	
gcg ctg gag gga gac ggg tcc ctg gaa aag gag ctc gcc att gac aac				1315
Ala Leu Glu Gly Asp Gly Ser Leu Glu Lys Glu Leu Ala Ile Asp Asn				
308	313	318	323	
atc atg ggg gag aag att gag atg atc gct cct gtg aac tcc cct tca				1363
Ile Met Gly Glu Lys Ile Glu Met Ile Ala Pro Val Asn Ser Pro Ser				
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Leu Asp Phe Asn Asp Asn Glu Asp Ile Pro Thr Glu Leu Ser Asp Ser				
340	345	350	355	
tcc gac aca cac gat gaa gga gag gtc cag gcc ttc tat gag gac ctg				1459
Ser Asp Thr His Asp Glu Gly Glu Val Gln Ala Phe Tyr Glu Asp Leu				
356	361	366	371	
agt ggc cgg cag tac gtg aat gaa gtc ttc aac ttc agc gtg gac aag				1507
Ser Gly Arg Gln Tyr Val Asn Glu Val Phe Asn Phe Ser Val Asp Lys				
372	377	382	387	
ctc tat gac ctc ctc ttc acc aac tcg ccc ttc cag cgg gat ttc atg				1555
Leu Tyr Asp Leu Leu Phe Thr Asn Ser Pro Phe Gln Arg Asp Phe Met				
388	393	398	403	
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Glu Gln Arg Arg Phe Ser Asp Ile Ile Phe His Pro Trp Lys Lys Glu				
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Glu Asn Gly Asn Gln Ser Arg Val Ile Leu Tyr Thr Ile Thr Leu Thr				
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Asn Pro Leu Ala Pro Lys Thr Ala Thr Val Arg Glu Thr Gln Thr Met				
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Tyr Lys Ala Ser Gln Glu Ser Glu Cys Tyr Val Ile Asp Ala Glu Val	
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Pro Asn Gly Phe His Leu Gln Ser Val Ser Lys Leu Leu Leu Val Ile	
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agc tgt gtt ctg gtg ctg ctg gtc atc ctt aac atg atg ctc ttc tac	2275
Ser Cys Val Leu Val Leu Leu Val Ile Leu Asn Met Met Leu Phe Tyr	
628 633 638 643	
aaa ctc tgg atg ttg gaa tac acc acg cag acc ctc act gcc tgg cag	2323
Lys Leu Trp Met Leu Glu Tyr Thr Thr Gln Thr Leu Thr Ala Trp Gln	
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ggg cta agg ctc caa gaa agg tta ccc cag tct cag aca gaa tgg gcc	2371
Gly Leu Arg Leu Gln Glu Arg Leu Pro Gln Ser Gln Thr Glu Trp Ala	
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Gln Leu Leu Glu Ser Gln Gln Lys Tyr His Asp Thr Glu Leu Gln Lys	
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tgg agg gaa atc atc aaa tcc tca gtg atg ctc ctt gac cag atg aag	2467
Trp Arg Glu Ile Ile Lys Ser Ser Val Met Leu Leu Asp Gln Met Lys	
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Asp Ser Leu Ile Asn Leu Gln Asn Gly Ile Arg Ser Arg Asp Tyr Thr	
708 713 718 723	
tcg gaa agt gaa gaa aag agg aat cgc tat cat tga caag gcaggaacag	2565
Ser Glu Ser Glu Glu Lys Arg Asn Arg Tyr His *	
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Lys Lys Lys Glu Gln Ser Glu Val Ser Val Ser Pro Arg Ala Ser Lys	
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86 91 96 101	
cta aat tca tct gaa aat ggt gag gac agg cac aaa cgc aaa gaa aga	511
Leu Asn Ser Ser Glu Asn Gly Glu Asp Arg His Lys Arg Lys Glu Arg	
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Lys Ser Ser Arg Gly Arg Ser His Ser Arg Ser Arg Ser Arg Glu Arg	
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Arg His Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser	
134 139 144 149	
agg gag cgg aag aaa tgc aga tcc aga agc aga gag agg aag aaa tgc	655
Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser	
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Lys Gln Gln Glu Ile Ala Ala Ala Ala Ala Ala Thr Gly Gly Ser Val	
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Leu Asn Val Ala Ala Leu Leu Ala Ser Gly Thr Gln Val Thr Pro Gln	
278 283 288 293	
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Glu Thr Gly Ile Ala	Val Pro Ser Tyr Tyr	Asn Pro Ala Ala Val	Asn	
310	315	320	325	
cca atg aaa ttt gct	gaa caa gag aaa aaa	agg aaa atg ctt tgg	cag	1183
Pro Met Lys Phe Ala	Glu Gln Glu Lys Lys	Arg Lys Met Leu Trp	Gln	
326	331	336	341	
ggc aag aaa gaa ggg	gac aaa tcc caa tct	gct gaa ata tgg gaa	aaa	1231
Gly Lys Lys Glu Gly	Asp Lys Ser Gln Ser	Ala Glu Ile Trp Glu	Lys	
342	347	352	357	
ttg aat ttt gga aac	aag gac caa aat gtc	aaa ttt agg aaa ttg	atg	1279
Leu Asn Phe Gly Asn	Lys Asp Gln Asn Val	Lys Phe Arg Lys Leu	Met	
358	363	368	373	
ggt att aag agt gaa	gat gaa gct gga tgt	agc tca gtt gat gaa	gaa	1327
Gly Ile Lys Ser Glu	Asp Glu Ala Gly Cys	Ser Ser Val Asp Glu	Glu	
374	379	384	389	
agt tac aag act ctg	aag cag cag gaa gaa	gta ttt cga aat tta	gat	1375
Ser Tyr Lys Thr Leu	Lys Gln Gln Glu Glu	Val Phe Arg Asn Leu	Asp	
390	395	400	405	
gct cag tat gaa atg	gca aga tca caa acc	cac aca caa aga gga	atg	1423
Ala Gln Tyr Glu Met	Ala Arg Ser Gln Thr	His Thr Gln Arg Gly	Met	
406	411	416	421	
ggt ttg ggt ttc aca	tct tca atg cga gga	atg gat gca gtt tga	aaa	1471
Gly Leu Gly Phe Thr	Ser Ser Met Arg Gly	Met Asp Ala Val	*	
422	427	432		
tgatcacact tgtaaagttt	gggacttata gacttcttgt	tctgatgtca cgtccttggt		1531
caccaaacag ctagcactct	agcttgcatg ggtgttgcat	tgactttaat ttattgaaaa		1591
atacaaattt ttgtaaatat	cagatcagtg atactgggtg	tagtgttgta atcagggtta		1651
accacttcc attaaacttg	acaggactat agaaggataa	tatttttttag ttcattgaatt		1711
ctacttttca aatatataaa	agctgcaggt ggggataaaa	tctcatacat ggattttttc		1771
gtgtccgctg tcttgtgtac	ttttgtactt aaccttgtag	agttattttc atctcttgaa		1831
acatgaaaga aatggtatgt	agatgttctt tagaagatct	ggccatttgg tacataatcc		1891
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<213> Homo sapiens

<220>

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<222> (133)..(531)

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aggggggaaag tc      atg ggc agg gcc tgg tgt ggg atg tgg agg aga cgg      168
                        Met Gly Arg Ala Trp Cys Gly Met Trp Arg Arg Arg
                        1              5              10

cgc ccg ggg agg agg agc gct gtg ccc agg tgg cct cac ttg tca tct      216
Arg Pro Gly Arg Arg Ser Ala Val Pro Arg Trp Pro His Leu Ser Ser
13              18              23              28

caa agt ggc gtc gaa ccc cct gac agg tgg acg gga acc ccc ggc tgg      264
Gln Ser Gly Val Glu Pro Pro Asp Arg Trp Thr Gly Thr Pro Gly Trp
29              34              39              44

ccc tcc aga gac cag gag gcc cct ggc tca atg atg cca cct gca gct      312
Pro Ser Arg Asp Gln Glu Ala Pro Gly Ser Met Met Pro Pro Ala Ala
45              50              55              60

gcc caa ccc tcc gcc cat ggt gcc ctt gtt cca cct gcc acc gct cat      360
Ala Gln Pro Ser Ala His Gly Ala Leu Val Pro Pro Ala Thr Ala His
61              66              71              76

gaa cct gtg gat cac cca gct ctg cac tgg ctt gcc tgc tgc tgc tgc      408
Glu Pro Val Asp His Pro Ala Leu His Trp Leu Ala Cys Cys Cys Cys
77              82              87              92

ctc agt tta cct ggg cag ttg ccc ctg gct atc cgg ctg gga tgg gac      456
Leu Ser Leu Pro Gly Gln Leu Pro Leu Ala Ile Arg Leu Gly Trp Asp
93              98              103              108

ttg gac tta gaa gca ggc ccc tcc tct gga aag ctg tgt cct cgg gcc      504
Leu Asp Leu Glu Ala Gly Pro Ser Ser Gly Lys Leu Cys Pro Arg Ala
109              114              119              124

agg agg tgg cag cct cta cct tcc tga gacag ggaccctttt ctgtccatca      556
Arg Arg Trp Gln Pro Leu Pro Ser *
125              130

gaggacagct gtatgaagac acagagagaa ggcagccatc tgtaagccag gaagagagcc      616

ctcaccaaga ctggaatcag cagcaccttg atattggact tccagcctcc agaactgcaa      676

gaaataagca cctgctgttt aaaaaaaaaa aa      708
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Met Lys Thr Leu Phe Leu	
1	
ggt gtc acg ctc ggc ctg gcc gct gcc ctg tcc ttc acc ctg gag gag	160
Gly Val Thr Leu Gly Leu Ala Ala Ala Leu Ser Phe Thr Leu Glu Glu	
7 12 17 22	
gag gat atc aca ggg acc tgg tac gtg aag gcc atg gtg gtc gat aag	208
Glu Asp Ile Thr Gly Thr Trp Tyr Val Lys Ala Met Val Val Asp Lys	
23 28 33 38	
gac ttt ccg gag gac agg agg ccc agg aag gtg tcc cca gtg aag gtg	256
Asp Phe Pro Glu Asp Arg Arg Pro Arg Lys Val Ser Pro Val Lys Val	
39 44 49 54	
aca gcc ctg ggc ggt ggg aac ttg gaa gcc acg ttc acc ttc atg agg	304
Thr Ala Leu Gly Gly Gly Asn Leu Glu Ala Thr Phe Thr Phe Met Arg	
55 60 65 70	
gag gat cgg tgc atc cag aag aaa atc ctg atg cgg aag acg gag gag	352
Glu Asp Arg Cys Ile Gln Lys Lys Ile Leu Met Arg Lys Thr Glu Glu	
71 76 81 86	
cct ggc aaa ttc agc gcc tat ggg ggc agg aag ctc ata tac ctg cag	400
Pro Gly Lys Phe Ser Ala Tyr Gly Gly Arg Lys Leu Ile Tyr Leu Gln	
87 92 97 102	
gag ctg ccc ggg acg gac gac tac gtc ttt tac tgc aaa gac cag cgc	448
Glu Leu Pro Gly Thr Asp Asp Tyr Val Phe Tyr Cys Lys Asp Gln Arg	
103 108 113 118	
cgt ggg ggc ctg cgc tac atg gga aag ctt gtg gca tct gct ccc tgc	496
Arg Gly Gly Leu Arg Tyr Met Gly Lys Leu Val Ala Ser Ala Pro Cys	
119 124 129 134	
agg gcc gtg ccg ctg tcc cca cgt cgg ctc acc tgg cca cct cac ctg	544
Arg Ala Val Pro Leu Ser Pro Arg Arg Leu Thr Trp Pro Pro His Leu	
135 140 145 150	
cag gta gga atc cta ata cca acc tgg agg ccc tgg aag aat tta aga	592
Gln Val Gly Ile Leu Ile Pro Thr Trp Arg Pro Trp Lys Asn Leu Arg	
151 156 161 166	
aat tgg tgc agc aca agg gac tct cgg agg agg aca ttt tca tgc ccc	640
Asn Trp Cys Ser Thr Arg Asp Ser Arg Arg Arg Thr Phe Ser Cys Pro	

167	172	177	182	
tgc aga cgg gaa gct	gcg ttc tcg aac act	agg cag ccc ccg ggt ctg		688
Cys Arg Arg Glu Ala	Ala Phe Ser Asn Thr	Arg Gln Pro Pro Gly Leu		
183	188	193	198	
cac ctc cag agc cca	ccc tac cac cag aca	cag agc ccg gac cac ctg		736
His Leu Gln Ser Pro	Pro Tyr His Gln Thr	Gln Ser Pro Asp His Leu		
199	204	209	214	
gac cta ccc tcc agc	cat gac cct tcc ctg	ctc cca ccc acc tga		781
Asp Leu Pro Ser Ser	His Asp Pro Ser Leu	Leu Pro Pro Thr *		
215	220	225		

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Met Arg Gln Lys Arg Lys Gly Asp Leu Ser Pro Ala Glu Leu Met Met	
1 5 10 15	
ctg act ata gga gat gtt att aaa caa ctg att gaa gcc cac gag cag	153
Leu Thr Ile Gly Asp Val Ile Lys Gln Leu Ile Glu Ala His Glu Gln	
17 22 27 32	
ggg aaa gac atc gat cta aat aag gtg aaa acc aag aca gct gcc aaa	201
Gly Lys Asp Ile Asp Leu Asn Lys Val Lys Thr Lys Thr Ala Ala Lys	
33 38 43 48	
tat ggc ctt tct gcc cag ccc cgc ctg gtg gat atc att gct gcc gtc	249
Tyr Gly Leu Ser Ala Gln Pro Arg Leu Val Asp Ile Ile Ala Ala Val	
49 54 59 64	
cct cct cag tat cgc aag gtc ttg atg ccc aag tta aag gcg aaa ccc	297
Pro Pro Gln Tyr Arg Lys Val Leu Met Pro Lys Leu Lys Ala Lys Pro	
65 70 75 80	
atc aga act gct agt ggg att gct gtc gtg gct gtg atg tgc aaa ccc	345
Ile Arg Thr Ala Ser Gly Ile Ala Val Val Ala Val Met Cys Lys Pro	
81 86 91 96	
cac aga tgt cca cac atc agt ttt aca gga aat ata tgt gta tac tgc	393
His Arg Cys Pro His Ile Ser Phe Thr Gly Asn Ile Cys Val Tyr Cys	
97 102 107 112	

cct ggt gga cct gat tct gat ttt gag tat tcc acc cag tct tac act	441
Pro Gly Gly Pro Asp Ser Asp Phe Glu Tyr Ser Thr Gln Ser Tyr Thr	
113 118 123 128	
ggc tat gag cca acc tcc atg aga gct atc cgt gcc aga tat gac cct	489
Gly Tyr Glu Pro Thr Ser Met Arg Ala Ile Arg Ala Arg Tyr Asp Pro	
129 134 139 144	
ttc cta cag aca aga cac cga ata gaa cag tta aaa caa ctt ggt cat	537
Phe Leu Gln Thr Arg His Arg Ile Glu Gln Leu Lys Gln Leu Gly His	
145 150 155 160	
agt gtg gat aaa gtg gag ttt att gtg atg ggt gga acg ttt atg gcc	585
Ser Val Asp Lys Val Glu Phe Ile Val Met Gly Gly Thr Phe Met Ala	
161 166 171 176	
ctt cca gaa gaa tac aga gat tat ttt att cga aat tta cat gat gcc	633
Leu Pro Glu Glu Tyr Arg Asp Tyr Phe Ile Arg Asn Leu His Asp Ala	
177 182 187 192	
tta tca gga cat act tcc aac aat att tac gag gca gtc aag tat tct	681
Leu Ser Gly His Thr Ser Asn Asn Ile Tyr Glu Ala Val Lys Tyr Ser	
193 198 203 208	
gag aga agc ctc aca aag tgt att gga att act att gaa acc aga cca	729
Glu Arg Ser Leu Thr Lys Cys Ile Gly Ile Thr Ile Glu Thr Arg Pro	
209 214 219 224	
gat tac tgc atg aag cga cat tta agt gac atg ttg acc tat ggc tgc	777
Asp Tyr Cys Met Lys Arg His Leu Ser Asp Met Leu Thr Tyr Gly Cys	
225 230 235 240	
aca agg ctg gag att ggg gtg cag agt gtt tat gaa gat gtg gct aga	825
Thr Arg Leu Glu Ile Gly Val Gln Ser Val Tyr Glu Asp Val Ala Arg	
241 246 251 256	
gac acc aac agg ggc cac act gtg aag gca gtg tgt gag tca ttt cac	873
Asp Thr Asn Arg Gly His Thr Val Lys Ala Val Cys Glu Ser Phe His	
257 262 267 272	
ctg gcc aaa gat tcc ggt ttt aaa gtg gtg gcc cat atg atg cct gac	921
Leu Ala Lys Asp Ser Gly Phe Lys Val Val Ala His Met Met Pro Asp	
273 278 283 288	
ctg cca aac gtg gga cta gaa aga gac att gaa cag ttc aca gag ttt	969
Leu Pro Asn Val Gly Leu Glu Arg Asp Ile Glu Gln Phe Thr Glu Phe	
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ttt gag aac cct gct ttt cgt ccc gat ggg ctg aaa ctc tat cct acc	1017
Phe Glu Asn Pro Ala Phe Arg Pro Asp Gly Leu Lys Leu Tyr Pro Thr	
305 310 315 320	
ctg gtg att cgt ggg acc ggg ctt tat gag ctt tgg aaa tca gga aga	1065
Leu Val Ile Arg Gly Thr Gly Leu Tyr Glu Leu Trp Lys Ser Gly Arg	
321 326 331 336	
gat aag agt tac tct cct agt gac ctg gtt gaa ttg gtg gct cgg atc	1113

Asp Lys Ser Tyr Ser Pro Ser Asp Leu Val Glu Leu Val Ala Arg Ile	
337 342 347 352	
cta gcc ctc gtg cct cca tgg act cga gtg tac cga gta cag agg gat	1161
Leu Ala Leu Val Pro Pro Trp Thr Arg Val Tyr Arg Val Gln Arg Asp	
353 358 363 368	
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Ile Pro Met Pro Leu Val Ser Ser Gly Val Glu His Gly Asn Leu Arg	
369 374 379 384	
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Glu Leu Ala Leu Ala Arg Met Lys Asp Leu Gly Ile Gln Cys Arg Asp	
385 390 395 400	
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Val Arg Thr Arg Glu Val Gly Ile Gln Glu Ile His His Lys Val Arg	
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cca tac cag gtt gaa ttg gta agg aga gat tat gtt gca aat ggt ggc	1353
Pro Tyr Gln Val Glu Leu Val Arg Arg Asp Tyr Val Ala Asn Gly Gly	
417 422 427 432	
tgg gaa aca ttc ttg tca tac gaa gac cca gat caa gac att ttg att	1401
Trp Glu Thr Phe Leu Ser Tyr Glu Asp Pro Asp Gln Asp Ile Leu Ile	
433 438 443 448	
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Gly Leu Leu Arg Leu Arg Lys Cys Ser Glu Glu Thr Phe Arg Phe Glu	
449 454 459 464	
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Leu Gly Gly Gly Val Ser Ile Val Arg Glu Leu His Val Tyr Gly Ser	
465 470 475 480	
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Val Val Pro Val Ser Ser Arg Asp Pro Thr Lys Phe Gln His Gln Gly	
481 486 491 496	
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Phe Gly Met Leu Leu Met Glu Glu Ala Glu Arg Ile Ala Arg Glu Glu	
497 502 507 512	
cat ggg tct ggg aaa atc gct gtg ata tca gga gtg gat gtc ctg ggg	1641
His Gly Ser Gly Lys Ile Ala Val Ile Ser Gly Val Asp Val Leu Gly	
513 518 523 528	
cag agg cag agg gga ggc cac cac aga agc tgt tca ctc tag gcacttt	1690
Gln Arg Gln Arg Gly Gly His His Arg Ser Cys Ser Leu *	
529 534 539	
gcaaggggtc ggcaccagga attattatag aaagatcggc tacagattac aaggcccgtg	1750
catggtgaag atgctgaaat aatggccaca ccagtccact cttctgcagt atcctccctg	1810
gcagaacacg gagaatcagg atttcttaaa tactcaacag agaggctgag cagagcaa	1870

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gggggggcttc accctcatcc cgcagctgca gagactggaa actgccttca aggccacggc 1930
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<210> 11
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<212> DNA
<213> Homo sapiens

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<220>
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<222> (58)..(1701)

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Met Arg Gln Lys Arg Lys Gly Asp Leu Ser Pro Ala Glu Leu Met Met
1 5 10 15

ctg act ata gga gat gtt att aaa caa ctg att gaa gcc cac gag cag 153
Leu Thr Ile Gly Asp Val Ile Lys Gln Leu Ile Glu Ala His Glu Gln
17 22 27 32

ggg aaa gac atc gat cta aat aag gtg aaa acc aag aca gct gcc aaa 201
Gly Lys Asp Ile Asp Leu Asn Lys Val Lys Thr Lys Thr Ala Ala Lys
33 38 43 48

tat ggc ctt tct gcc cag ccc cgc ctg gtg gat atc att gct gcc gtc 249
Tyr Gly Leu Ser Ala Gln Pro Arg Leu Val Asp Ile Ile Ala Ala Val
49 54 59 64

cct cct cag tat cgc aag gtc ttg atg ccc aag tta aag gcg aaa ccc 297
Pro Pro Gln Tyr Arg Lys Val Leu Met Pro Lys Leu Lys Ala Lys Pro
65 70 75 80

atc aga act gct agt ggg att gct gtc gtg gct gtg atg tgc aaa ccc 345
Ile Arg Thr Ala Ser Gly Ile Ala Val Val Ala Val Met Cys Lys Pro
81 86 91 96

cac aga tgt cca cac atc agt ttt aca gga aat ata tgt gta tac tgc 393
His Arg Cys Pro His Ile Ser Phe Thr Gly Asn Ile Cys Val Tyr Cys
97 102 107 112

cct ggt gga cct gat tct gat ttt gag tat tcc acc cag tct tac act 441
Pro Gly Gly Pro Asp Ser Asp Phe Glu Tyr Ser Thr Gln Ser Tyr Thr
113 118 123 128

ggc tat gag cca acc tcc atg aga gct atc cgt gcc aga tat gac cct 489

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Gly Tyr Glu Pro Thr Ser Met Arg Ala Ile Arg Ala Arg Tyr Asp Pro	
129 134 139 144	
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Phe Leu Gln Thr Arg His Arg Ile Glu Gln Leu Lys Gln Leu Gly His	
145 150 155 160	
agt gtg gat aaa gtg gag ttt att gtg atg ggt gga acg ttt atg gcc	585
Ser Val Asp Lys Val Glu Phe Ile Val Met Gly Gly Thr Phe Met Ala	
161 166 171 176	
ctt cca gaa gaa tac aga gat tat ttt att cga aat tta cat gat gcc	633
Leu Pro Glu Glu Tyr Arg Asp Tyr Phe Ile Arg Asn Leu His Asp Ala	
177 182 187 192	
tta tca gga cat act tcc aac aat att tac gag gca gtc aag tat tct	681
Leu Ser Gly His Thr Ser Asn Asn Ile Tyr Glu Ala Val Lys Tyr Ser	
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gag aga agc ctc aca aag tgt att gga att act att gaa acc aga cca	729
Glu Arg Ser Leu Thr Lys Cys Ile Gly Ile Thr Ile Glu Thr Arg Pro	
209 214 219 224	
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Asp Tyr Cys Met Lys Arg His Leu Ser Asp Met Leu Thr Tyr Gly Cys	
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aca agg ctg gag att ggg gtg cag agt gtt tat gaa gat gtg gct aga	825
Thr Arg Leu Glu Ile Gly Val Gln Ser Val Tyr Glu Asp Val Ala Arg	
241 246 251 256	
gac acc aac agg ggc cac act gtg aag gca gtg tgt gag tca ttt cac	873
Asp Thr Asn Arg Gly His Thr Val Lys Ala Val Cys Glu Ser Phe His	
257 262 267 272	
ctg gcc aaa gat tcc ggt ttt aaa gtg gtg gcc cat atg atg cct gac	921
Leu Ala Lys Asp Ser Gly Phe Lys Val Val Ala His Met Met Pro Asp	
273 278 283 288	
ctg cca aac gtg gga cta gaa aga gac att gaa cag ttc aca gag ttt	969
Leu Pro Asn Val Gly Leu Glu Arg Asp Ile Glu Gln Phe Thr Glu Phe	
289 294 299 304	
ttt gag aac cct gct ttt cgt ccc gat ggg ctg aaa ctc tat cct acc	1017
Phe Glu Asn Pro Ala Phe Arg Pro Asp Gly Leu Lys Leu Tyr Pro Thr	
305 310 315 320	
ctg gtg att cgt ggg acc ggg ctt tat gag ctt tgg aaa tca gga aga	1065
Leu Val Ile Arg Gly Thr Gly Leu Tyr Glu Leu Trp Lys Ser Gly Arg	
321 326 331 336	
gat aag agt tac tct cct agt gac ctg gtt gaa ttg gtg gct cgg atc	1113
Asp Lys Ser Tyr Ser Pro Ser Asp Leu Val Glu Leu Val Ala Arg Ile	
337 342 347 352	
cta gcc ctc gtg cct cca tgg act cga gtg tac cga gta cag agg gat	1161
Leu Ala Leu Val Pro Pro Trp Thr Arg Val Tyr Arg Val Gln Arg Asp	



353	358	363	368	
att cca atg cct tta gtt agc tca gga gta gag cat ggt aac ctg aga				1209
Ile Pro Met Pro Leu Val Ser Ser Gly Val Glu His Gly Asn Leu Arg				
369	374	379	384	
gag ctg gca ctt gca aga atg aaa gac ctc gga ata cag tgt cga gat				1257
Glu Leu Ala Leu Ala Arg Met Lys Asp Leu Gly Ile Gln Cys Arg Asp				
385	390	395	400	
gtg aga acc aga gaa gtt gga atc caa gaa att cat cac aaa gta cgg				1305
Val Arg Thr Arg Glu Val Gly Ile Gln Glu Ile His His Lys Val Arg				
401	406	411	416	
cca tac cag gtt gaa ttg gta agg aga gat tat gtt gca aat ggt ggc				1353
Pro Tyr Gln Val Glu Leu Val Arg Arg Asp Tyr Val Ala Asn Gly Gly				
417	422	427	432	
tgg gaa aca ttc ttg tca tac gaa gac cca gat caa gac att ttg att				1401
Trp Glu Thr Phe Leu Ser Tyr Glu Asp Pro Asp Gln Asp Ile Leu Ile				
433	438	443	448	
ggc ctc cta cga tta cgc aag tgt tca gaa gaa act ttc cgt ttc gaa				1449
Gly Leu Leu Arg Leu Arg Lys Cys Ser Glu Glu Thr Phe Arg Phe Glu				
449	454	459	464	
ttg ggt gga ggt gtc tcc ata gta cga gag ctg cat gtg tat ggg agt				1497
Leu Gly Gly Gly Val Ser Ile Val Arg Glu Leu His Val Tyr Gly Ser				
465	470	475	480	
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Val Val Pro Val Ser Ser Arg Asp Pro Thr Lys Phe Gln His Gln Gly				
481	486	491	496	
ttt ggc atg ctg ctg atg gag gaa gca gaa aga ata gct aga gaa gaa				1593
Phe Gly Met Leu Leu Met Glu Glu Ala Glu Arg Ile Ala Arg Glu Glu				
497	502	507	512	
cat ggg tct ggg aaa atc gct gtg ata tca ggg gtc ggc acc agg aat				1641
His Gly Ser Gly Lys Ile Ala Val Ile Ser Gly Val Gly Thr Arg Asn				
513	518	523	528	
tat tat aga aag atc ggc tac aga tta caa ggc ccg tac atg gtg aag				1689
Tyr Tyr Arg Lys Ile Gly Tyr Arg Leu Gln Gly Pro Tyr Met Val Lys				
529	534	539	544	
atg ctg aaa taa tgg ccacaccagt ccactcttct gcagtatcct ccctggcaga				1744
Met Leu Lys *				
545				
acacggagaa tcaggatttc ttaaatactc aacagagagg ctgagcagag caaatggggg				1804
gcttcaccct catcccgag ctgcagagac tggaaactgc cttcaaggcc acggctggtc				1864
atctgtgac cacacccag atccgcctc tctgctgc accccaaaa atcacttgcg				1924
tttttgaggc ttaaatcatc tatccagttt ctacattttg catgaggcct gcagggtggcc				1984

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ataaaaactga ttgtcattcg aaaaaaaaaa aa 2076

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<212> DNA  
<213> Homo sapiens

<220>  
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<222> (71)..(487)

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Met Ala Glu Leu Gln Gln Leu Arg Val Gln Glu Ala Val  
1 5 10

gag tcc atg gtg aag agt ctg gaa aga gag aac atc cgg aag atg cag 157  
Glu Ser Met Val Lys Ser Leu Glu Arg Glu Asn Ile Arg Lys Met Gln  
14 19 24 29

ggt ctc atg ttc cgg tgc agc gcc agc tgt tgt gag gac agc cag gcc 205  
Gly Leu Met Phe Arg Cys Ser Ala Ser Cys Cys Glu Asp Ser Gln Ala  
30 35 40 45

tcc atg aag cag gtg cac cag tgc atc gag cgc tgc cat gtg cct ctg 253  
Ser Met Lys Gln Val His Gln Cys Ile Glu Arg Cys His Val Pro Leu  
46 51 56 61

gct caa gcc cag gct ttg gtc acc agt gag ctg gag aag ttc cag gac 301  
Ala Gln Ala Gln Ala Leu Val Thr Ser Glu Leu Glu Lys Phe Gln Asp  
62 67 72 77

cgc ctg gcc cgg tgc acc atg cat tgc aac gac aaa gcc aaa gat tca 349  
Arg Leu Ala Arg Cys Thr Met His Cys Asn Asp Lys Ala Lys Asp Ser  
78 83 88 93

ata gat gct ggg agt aag gag ctt cag gtg aag cag cag ctg gac agt 397  
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Met Asn Arg Glu Asp Arg Asn Val Leu Arg Met Lys Glu Arg Glu Arg	
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cgg aat cag gaa att cag cag ggc gaa gac gcc ttc cca cct agc tct	155
Arg Asn Gln Glu Ile Gln Gln Gly Glu Asp Ala Phe Pro Pro Ser Ser	
17 22 27 32	
cct ctc ttt gca gag cca tac aaa gtt act agc aaa gaa gat aag tta	203
Pro Leu Phe Ala Glu Pro Tyr Lys Val Thr Ser Lys Glu Asp Lys Leu	
33 38 43 48	
tca agt cgt att cag agt atg ctt gga aac tac gat gaa atg aag gat	251
Ser Ser Arg Ile Gln Ser Met Leu Gly Asn Tyr Asp Glu Met Lys Asp	
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Phe Ile Gly Asp Arg Ser Ile Pro Lys Leu Val Ala Ile Pro Lys Pro	
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Thr Val Pro Pro Ser Ala Asp Glu Lys Ser Asn Pro Asn Phe Phe Glu	
81 86 91 96	
cag aga cat gga ggc tct cat cag agt agc aaa tgg act cca gta gga	395
Gln Arg His Gly Gly Ser His Gln Ser Ser Lys Trp Thr Pro Val Gly	
97 102 107 112	
ccc gca ccc agc act tct cag tct cag aaa cgg tcc tca ggc tta cag	443
Pro Ala Pro Ser Thr Ser Gln Ser Gln Lys Arg Ser Ser Gly Leu Gln	
113 118 123 128	
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Ser Gly His Ser Ser Gln Arg Thr Ser Ala Gly Ser Ser Ser Gly Thr	
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Asn Ser Ser Gly Gln Arg His Asp Arg Glu Ser Tyr Asn Asn Ser Gly	
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Ser Ser Ser Arg Lys Lys Gly Gln His Gly Ser Glu His Ser Lys Ser	
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193					198					203					208		
cgc	tcc	aaa	tca	cct	cgg	gac	cct	gat	gca	aac	tgg	gat	tct	cct	tcc	731	
Arg	Ser	Lys	Ser	Pro	Arg	Asp	Pro	Asp	Ala	Asn	Trp	Asp	Ser	Pro	Ser		
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Arg	Val	Pro	Phe	Ser	Ser	Gly	Gln	His	Ser	Thr	Gln	Ser	Phe	Pro	Pro		
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Val	Arg	Pro	Met	Asp	Gly	Gln	Glu	Ser	Met	Glu	Pro	Lys	Leu	Ser	Ser		
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gag	cac	tac	agc	agc	caa	tcc	cat	ggc	aac	agc	atg	act	gag	ctg	aag	923	
Glu	His	Tyr	Ser	Ser	Gln	Ser	His	Gly	Asn	Ser	Met	Thr	Glu	Leu	Lys		
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Pro	Ser	Ser	Lys	Ala	His	Leu	Thr	Lys	Leu	Lys	Ile	Pro	Ser	Gln	Pro		
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ctg	gat	gca	tca	gct	tct	ggt	gat	gtg	agc	tgt	gtg	gat	gaa	atc	cta	1019	
Leu	Asp	Ala	Ser	Ala	Ser	Gly	Asp	Val	Ser	Cys	Val	Asp	Glu	Ile	Leu		
305					310					315					320		
aaa	gag	atg	acg	cat	tca	tgg	cct	ccc	cct	cta	acg	gct	att	cat	aca	1067	
Lys	Glu	Met	Thr	His	Ser	Trp	Pro	Pro	Pro	Leu	Thr	Ala	Ile	His	Thr		
321					326					331					336		
cca	tgc	aaa	aca	gaa	cct	tcc	aaa	ttt	cct	ttt	cca	act	aag	gag	tct	1115	
Pro	Cys	Lys	Thr	Glu	Pro	Ser	Lys	Phe	Pro	Phe	Pro	Thr	Lys	Glu	Ser		
337					342					347					352		
cag	cag	tcc	aat	ttt	ggc	act	gga	gaa	caa	aaa	aga	tat	aat	cct	tct	1163	
Gln	Gln	Ser	Asn	Phe	Gly	Thr	Gly	Glu	Gln	Lys	Arg	Tyr	Asn	Pro	Ser		
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Lys	Thr	Ser	Asn	Gly	His	Gln	Ser	Lys	Ser	Met	Leu	Lys	Asp	Asp	Leu		
369					374					379					384		
aaa	cta	agc	agc	agt	gaa	gac	agt	gat	ggg	gaa	cag	gat	tgt	gat	aag	1259	
Lys	Leu	Ser	Ser	Ser	Glu	Asp	Ser	Asp	Gly	Glu	Gln	Asp	Cys	Asp	Lys		
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aca	atg	ccg	agg	agt	aca	cca	gga	agt	aac	tct	gaa	cct	tca	cac	cat	1307	
Thr	Met	Pro	Arg	Ser	Thr	Pro	Gly	Ser	Asn	Ser	Glu	Pro	Ser	His	His		

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Asn Ser Glu Gly Ala Asp Asn Ser Arg Asp Asp Ser Ser Ser His Ser				
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Gly Ser Glu Ser Ser Ser Gly Ser Asp Ser Glu Ser Glu Ser Ser Ser				
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Ser Asp Ser Glu Ala Asn Glu Pro Ser Gln Ser Ala Ser Pro Glu Pro				
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gaa ccc ccg cca aca aac aaa tgg caa ctt gat aat tgg ctg aat aaa				1499
Glu Pro Pro Pro Thr Asn Lys Trp Gln Leu Asp Asn Trp Leu Asn Lys				
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Val Asn Pro His Lys Val Ser Pro Ala Ser Ser Val Asp Ser Asn Ile				
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Pro Ser Ser Gln Gly Tyr Lys Lys Glu Gly Arg Glu Gln Gly Thr Gly				
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Asn Ser Tyr Thr Asp Thr Ser Gly Pro Lys Glu Thr Ser Ser Ala Thr				
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Pro Gly Arg Asp Ser Lys Thr Ile Gln Lys Gly Ser Glu Ser Gly Arg				
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Gly Arg Gln Lys Ser Pro Ala Gln Ser Asp Ser Thr Thr Gln Arg Arg				
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act gta ggc aaa aaa caa ccc aaa aag gct gag aag gca gct gct gaa				1787
Thr Val Gly Lys Lys Gln Pro Lys Lys Ala Glu Lys Ala Ala Ala Glu				
561	566	571	576	
gag cct cgt gga ggc ctg aag ata gaa agt gaa acc cct gta gac ttg				1835
Glu Pro Arg Gly Gly Leu Lys Ile Glu Ser Glu Thr Pro Val Asp Leu				
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gct agc agc atg ccc tcc agc aga cac aaa gca gcc acc aaa ggc tca				1883
Ala Ser Ser Met Pro Ser Ser Arg His Lys Ala Ala Thr Lys Gly Ser				
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Arg Lys Pro Asn Ile Lys Lys Glu Ser Lys Ser Ser Pro Arg Pro Thr				
609	614	619	624	
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Ala Glu Lys Lys Lys Tyr Lys Ser Thr Ser Lys Ser Ser Gln Lys Ser				
625	630	635	640	

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Arg Glu Ile Ile Glu Thr Asp Thr Ser Ser Ser Asp Ser Asp Glu Ser	
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Glu Ser Leu Pro Pro Ser Ser Gln Thr Pro Lys Tyr Pro Glu Ser Asn	
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Arg Thr Pro Val Lys Pro Ser Ser Val Glu Glu Glu Asp Ser Phe Phe	
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Arg Gln Arg Met Phe Ser Pro Met Glu Glu Lys Glu Leu Leu Ser Pro	
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Leu Ser Glu Pro Asp Asp Arg Tyr Pro Leu Ile Val Lys Ile Asp Leu	
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Asn Leu Leu Thr Arg Ile Pro Gly Lys Pro Tyr Lys Glu Thr Glu Pro	
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Pro Lys Gly Glu Lys Lys Asn Val Pro Glu Lys His Thr Arg Glu Ala	
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Gln Lys Gln Ala Ser Glu Lys Val Ser Asn Lys Gly Lys Arg Glu Ala	
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 Glu Ile Gln Gln Lys Cys Gly Phe Ser Glu Leu Tyr Ser Trp Gln Arg  
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 gaa aga aaa gta aag aca gaa ttt tgc ctt cat gat gga cct cct tat 325  
 Glu Arg Lys Val Lys Thr Glu Phe Cys Leu His Asp Gly Pro Pro Tyr



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46	51	56	61	
gac ata gcc aat cga ttc cat atg atg aat ggc tcc aaa ata cat ttt				421
Asp Ile Ala Asn Arg Phe His Met Met Asn Gly Ser Lys Ile His Phe				
62	67	72	77	
gtg ccc ggc tgg gat tgt cat ggg ttg ccc att gaa ata aaa gta tta				469
Val Pro Gly Trp Asp Cys His Gly Leu Pro Ile Glu Ile Lys Val Leu				
78	83	88	93	
tca gaa ctt ggt aga gaa gct cag aat ctt tca gct atg gaa att aga				517
Ser Glu Leu Gly Arg Glu Ala Gln Asn Leu Ser Ala Met Glu Ile Arg				
94	99	104	109	
aag aaa gct aga tca ttt gct aaa gca gcc att gag aaa cag aaa tca				565
Lys Lys Ala Arg Ser Phe Ala Lys Ala Ala Ile Glu Lys Gln Lys Ser				
110	115	120	125	
gca ttt att cgt tgg gga ata atg gca gat tgg aat aat tgc tac tat				613
Ala Phe Ile Arg Trp Gly Ile Met Ala Asp Trp Asn Asn Cys Tyr Tyr				
126	131	136	141	
aca ttt gat ggg aag tat gaa gcc aaa cag ttg aga act ttt tac caa				661
Thr Phe Asp Gly Lys Tyr Glu Ala Lys Gln Leu Arg Thr Phe Tyr Gln				
142	147	152	157	
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Met Tyr Asp Lys Gly Leu Val Tyr Arg Ser Tyr Lys Pro Val Phe Trp				
158	163	168	173	
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Ser Pro Ser Ser Arg Thr Ala Leu Ala Glu Ala Glu Leu Glu Tyr Asn				
174	179	184	189	
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Pro Glu His Val Ser Arg Ser Ile Tyr Val Lys Phe Pro Leu Leu Lys				
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Pro Ser Pro Lys Leu Ala Ser Leu Ile Asp Gly Ser Ser Pro Val Ser				
206	211	216	221	
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Ile Leu Val Trp Thr Thr Gln Pro Trp Thr Ile Pro Ala Asn Glu Ala				
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Val Cys Tyr Met Pro Glu Ser Lys Tyr Ala Val Val Lys Cys Ser Lys				
238	243	248	253	
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Ser Gly Asp Leu Tyr Val Leu Ala Ala Asp Lys Val Ala Ser Val Ala				
254	259	264	269	

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Asp Leu Glu Asn Gly Thr Cys Ser His Pro Leu Ile Pro Asp Lys Ala	
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Leu Val His Thr Ala Pro Ala His Gly Met Glu Asp Tyr Gly Val Ala	
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Ser Gln His Asn Leu Pro Met Asp Cys Leu Val Asp Glu Asp Gly Val	
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Val Phe His His Lys Thr Lys Asp Glu Tyr Leu Ile Asn Ser Gln Thr	
462 467 472 477	
act gag cat att gtt aaa cta gtg gaa caa cac ggc agt gat atc tgg	1669
Thr Glu His Ile Val Lys Leu Val Glu Gln His Gly Ser Asp Ile Trp	
478 483 488 493	

tgg act ctt ccc cct	gaa caa ctt ctt cca	aaa gaa gtc tta tct gag	1717
Trp Thr Leu Pro Pro	Glu Gln Leu Leu Pro	Lys Glu Val Leu Ser Glu	
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gtt ggt ggc cct gat	gcc ttg gaa tat gtg	cca ggt cag gat att ttg	1765
Val Gly Gly Pro Asp	Ala Leu Glu Tyr Val	Pro Gly Gln Asp Ile Leu	
510	515	520 525	
gac atc tgg ttt gat	agc gga act tca tgg	tct tat gtt ctt cca ggt	1813
Asp Ile Trp Phe Asp	Ser Gly Thr Ser Trp	Ser Tyr Val Leu Pro Gly	
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cct gac caa aga gca	gat ttg tac ttg gaa	gga aaa gac cag ctc ggg	1861
Pro Asp Gln Arg Ala	Asp Leu Tyr Leu Glu	Gly Lys Asp Gln Leu Gly	
542	547	552 557	
ggt tgg ttt cag tca	tcc tta tta aca agt	gtg gca gca agg aag aga	1909
Gly Trp Phe Gln Ser	Ser Leu Leu Thr Ser	Val Ala Ala Arg Lys Arg	
558	563	568 573	
gca cct tat aag aca	gtg att gtt cat gga	ttt acc ctt gga gaa aag	1957
Ala Pro Tyr Lys Thr	Val Ile Val His Gly	Phe Thr Leu Gly Glu Lys	
574	579	584 589	
gga gaa aag atg tcc	aag tct ctt ggg aat	gtc att cat cct gat gtt	2005
Gly Glu Lys Met Ser	Lys Ser Leu Gly Asn	Val Ile His Pro Asp Val	
590	595	600 605	
gtc gtt aat gga gga	caa gat caa agc aaa	gag cct ccg tat ggt gct	2053
Val Val Asn Gly Gly	Gln Asp Gln Ser Lys	Glu Pro Pro Tyr Gly Ala	
606	611	616 621	
gat gtc ctt cgc tgg	tgg gta gct gat tcc	aat gtc ttc acc gaa gtt	2101
Asp Val Leu Arg Trp	Trp Val Ala Asp Ser	Asn Val Phe Thr Glu Val	
622	627	632 637	
gca att ggc cca tcc	gtg ctc aat gct gcc	aga gat gat att agc aag	2149
Ala Ile Gly Pro Ser	Val Leu Asn Ala Ala	Arg Asp Asp Ile Ser Lys	
638	643	648 653	
ctt agg aat aca ctt	cgc ttt ctt ttg gga	aat gtg gct gat ttc aac	2197
Leu Arg Asn Thr Leu	Arg Phe Leu Leu Gly	Asn Val Ala Asp Phe Asn	
654	659	664 669	
cca gaa aca gat tcc	atc cct gta aac gat	atg tat gtc ata gac cag	2245
Pro Glu Thr Asp Ser	Ile Pro Val Asn Asp	Met Tyr Val Ile Asp Gln	
670	675	680 685	
tac atg cta cac tta	ctg cag gat ttg gca	aac aag att acc gaa tta	2293
Tyr Met Leu His Leu	Leu Gln Asp Leu Ala	Asn Lys Ile Thr Glu Leu	
686	691	696 701	
tac aaa caa tat gat	ttt gga aaa gtt gtt	cgg ctg tta cgg acg ttt	2341
Tyr Lys Gln Tyr Asp	Phe Gly Lys Val Val	Arg Leu Leu Arg Thr Phe	
702	707	712 717	
tat acc aga gag ctc	tct aac ttt tat ttc	agt ata atc aaa gat agg	2389

Tyr Thr Arg Glu Leu Ser Asn Phe Tyr Phe Ser Ile Ile Lys Asp Arg	
718 723 728 733	
ctc tat tgt gaa aag gaa aat gac ccc aaa cga cgc tct tgt cag act	2437
Leu Tyr Cys Glu Lys Glu Asn Asp Pro Lys Arg Arg Ser Cys Gln Thr	
734 739 744 749	
gca tta gtt gaa att ttg gat gta ata gtt cgt tct ttt gct ccc att	2485
Ala Leu Val Glu Ile Leu Asp Val Ile Val Arg Ser Phe Ala Pro Ile	
750 755 760 765	
ctt cct cac ctg gct gaa gag gtg ttc cag cac ata cct tat att aaa	2533
Leu Pro His Leu Ala Glu Glu Val Phe Gln His Ile Pro Tyr Ile Lys	
766 771 776 781	
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Glu Pro Lys Ser Val Phe Arg Thr Gly Trp Ile Ser Thr Ser Ser Ile	
782 787 792 797	
tgg aaa aag ccc ggg ttg gaa gaa gct gtg aga gtg cgt gtg caa tgc	2629
Trp Lys Lys Pro Gly Leu Glu Glu Ala Val Arg Val Arg Val Gln Cys	
798 803 808 813	
gag act cat ttc ttg gaa gca tcc ctg gca aaa atg cag ctg agt aca	2677
Glu Thr His Phe Leu Glu Ala Ser Leu Ala Lys Met Gln Leu Ser Thr	
814 819 824 829	
agg tta tca ctg tga tagaacctgg actgcttttt gagataatag agatgctgca	2732
Arg Leu Ser Leu *	
830	
gtctgaagag acttccagca cctctcagtt gaatgaatta atgatggctt ctgagtcaac	2792
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aagaaccctc ctgacagtac tggttggaag tttggatgga ttattttacaa tatagggaag	3092
aaagccaaga tttaggtaat gagtggatga gtaaatggtg gaggatggga gcaaaataga	3152
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Met Arg Pro Arg Arg Pro Leu Val Phe Met Ser Leu Val Cys  
1 5 10

gca ctc ttg aac aca tgc cag gca cac agg gtg cat gac gac aag cct 155  
Ala Leu Leu Asn Thr Cys Gln Ala His Arg Val His Asp Asp Lys Pro  
15 20 25 30

aat att gtc cta atc atg gtt gat gac ctg ggt att gga gat ctg ggc 203  
Asn Ile Val Leu Ile Met Val Asp Asp Leu Gly Ile Gly Asp Leu Gly  
31 36 41 46

tgc tac ggc aat gac acc atg agg acg cct cac atc gac cgc ctt gcc 251  
Cys Tyr Gly Asn Asp Thr Met Arg Thr Pro His Ile Asp Arg Leu Ala  
47 52 57 62

agg gaa ggc gtg cga ctg act cag cac atc tct gcc gcc tcc ctc tgc 299  
Arg Glu Gly Val Arg Leu Thr Gln His Ile Ser Ala Ala Ser Leu Cys  
63 68 73 78

agc cca agc cgg tcc gcg ttc ttg acg gga aga tac ccc atc cga tca 347  
Ser Pro Ser Arg Ser Ala Phe Leu Thr Gly Arg Tyr Pro Ile Arg Ser  
79 84 89 94

ggt atg gtt tct agt ggt aat aga cgt gtc atc caa aat ctt gca gtc 395  
Gly Met Val Ser Ser Gly Asn Arg Arg Val Ile Gln Asn Leu Ala Val  
95 100 105 110

ccc gca ggc ctc cct ctt aat gag aca aca ctt gca gcc ttg cta aag 443  
Pro Ala Gly Leu Pro Leu Asn Glu Thr Thr Leu Ala Ala Leu Leu Lys  
111 116 121 126

aag caa gga tac agc acg ggg ctt ata ggc aaa tgg cac caa ggc ttg 491  
Lys Gln Gly Tyr Ser Thr Gly Leu Ile Gly Lys Trp His Gln Gly Leu  
127 132 137 142

aac tgc gac tcc cga agt gac cag tgc cac cat cca tat aat tat ggg 539  
Asn Cys Asp Ser Arg Ser Asp Gln Cys His His Pro Tyr Asn Tyr Gly  
143 148 153 158

ttt gac tac tac tat ggc atg ccg ttc act ctc gtt gac agc tgc tgg 587  
Phe Asp Tyr Tyr Tyr Gly Met Pro Phe Thr Leu Val Asp Ser Cys Trp  
159 164 169 174

ccg gac ccc tct cgt aac acg gaa tta gcc ttt gag agt cag ctc tgg 635  
Pro Asp Pro Ser Arg Asn Thr Glu Leu Ala Phe Glu Ser Gln Leu Trp  
175 180 185 190

ctc tgt gtg cag cta gtt gcc att gcc atc ctc acc cta acc ttt ggg 683  
Leu Cys Val Gln Leu Val Ala Ile Ala Ile Leu Thr Leu Thr Phe Gly  
191 196 201 206

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tcc cct tta tac tgg gac tgc ctc ctc atg cgg ggg cac gag atc acg Ser Pro Leu Tyr Trp Asp Cys Leu Leu Met Arg Gly His Glu Ile Thr 239 244 249 254	827
gag cag ccc atg aag gct gaa cga gct gga tcc att atg gtg aag gaa Glu Gln Pro Met Lys Ala Glu Arg Ala Gly Ser Ile Met Val Lys Glu 255 260 265 270	875
gcg att tcc ttt tta gaa agg cac agt aag gaa act ttc ctt ctc ttt Ala Ile Ser Phe Leu Glu Arg His Ser Lys Glu Thr Phe Leu Leu Phe 271 276 281 286	923
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act ggc acc agc aag cat ggc ttg tat ggg gat aat gtg gaa gag atg Thr Gly Thr Ser Lys His Gly Leu Tyr Gly Asp Asn Val Glu Glu Met 303 308 313 318	1019
gac tcc atg gtg ggc aag att ctt gat gct atc gat gat ttt ggc cta Asp Ser Met Val Gly Lys Ile Leu Asp Ala Ile Asp Asp Phe Gly Leu 319 324 329 334	1067
agg aac aac acc ctt gtc tac ttt aca tca gat cac gga ggg cat ttg Arg Asn Asn Thr Leu Val Tyr Phe Thr Ser Asp His Gly Gly His Leu 335 340 345 350	1115
gaa gct agg cga ggg cat gcc caa ctt ggt gga tgg aat gga ata tac Glu Ala Arg Arg Gly His Ala Gln Leu Gly Gly Trp Asn Gly Ile Tyr 351 356 361 366	1163
aaa ggt gga aaa ggc atg ggg ggc tgg gaa ggt gga atc cgc gtc cca Lys Gly Gly Lys Gly Met Gly Gly Trp Glu Gly Gly Ile Arg Val Pro 367 372 377 382	1211
gga att gtc cga tgg cct gga aag gta cca gct gga cgg ttg att aag Gly Ile Val Arg Trp Pro Gly Lys Val Pro Ala Gly Arg Leu Ile Lys 383 388 393 398	1259
gaa cct aca agt tta atg gat att tta cca act gtc gca tca gtg tca Glu Pro Thr Ser Leu Met Asp Ile Leu Pro Thr Val Ala Ser Val Ser 399 404 409 414	1307
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ccc ttg ctg cag ggc aac gtc agg cac tcg gag cat gaa ttt ctt ttc	1403

Pro	Leu	Leu	Gln	Gly	Asn	Val	Arg	His	Ser	Glu	His	Glu	Phe	Leu	Phe		
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cac	tac	tgt	ggc	tcc	tac	ctg	cac	gcc	gtg	cgg	tgg	atc	ccc	aag	gac	1451	
His	Tyr	Cys	Gly	Ser	Tyr	Leu	His	Ala	Val	Arg	Trp	Ile	Pro	Lys	Asp		
447					452					457					462		
gac	agt	ggg	tca	ggt	tgg	aag	gct	cac	tat	gtg	acc	ccg	gta	ttc	cag	1499	
Asp	Ser	Gly	Ser	Val	Trp	Lys	Ala	His	Tyr	Val	Thr	Pro	Val	Phe	Gln		
463					468					473					478		
cca	cca	gct	tct	ggg	ggc	tgc	tat	gtc	acc	tca	tta	tgc	aga	tgt	ttc	1547	
Pro	Pro	Ala	Ser	Gly	Gly	Cys	Tyr	Val	Thr	Ser	Leu	Cys	Arg	Cys	Phe		
479					484					489					494		
gga	gaa	cag	ggt	acc	tac	cac	aac	ccc	cct	ctg	ctc	ttc	gat	ctc	tcc	1595	
Gly	Glu	Gln	Val	Thr	Tyr	His	Asn	Pro	Pro	Leu	Leu	Phe	Asp	Leu	Ser		
495					500					505					510		
agg	gac	ccc	tca	gag	tcc	aca	ccc	ctg	aca	cct	gcc	aca	gag	ccc	ctc	1643	
Arg	Asp	Pro	Ser	Glu	Ser	Thr	Pro	Leu	Thr	Pro	Ala	Thr	Glu	Pro	Leu		
511					516					521					526		
tat	gat	ttt	gtg	att	aaa	aag	gtg	gcc	aac	gcc	ctg	aag	gaa	cac	cag	1691	
Tyr	Asp	Phe	Val	Ile	Lys	Lys	Val	Ala	Asn	Ala	Leu	Lys	Glu	His	Gln		
527					532					537					542		
gaa	acc	atc	gtg	cct	gtg	acc	tac	caa	ctc	tca	gaa	ctg	aat	cag	ggc	1739	
Glu	Thr	Ile	Val	Pro	Val	Thr	Tyr	Gln	Leu	Ser	Glu	Leu	Asn	Gln	Gly		
543					548					553					558		
agg	acg	tgg	ctg	aag	cct	tgc	tgt	ggg	gtg	ttc	cca	ttt	tgt	ctg	tgt	1787	
Arg	Thr	Trp	Leu	Lys	Pro	Cys	Cys	Gly	Val	Phe	Pro	Phe	Cys	Leu	Cys		
559					564					569					574		
gac	aag	gaa	gag	gaa	gtc	tct	cag	cct	cgg	ggg	cct	aac	gag	aag	aga	1835	
Asp	Lys	Glu	Glu	Glu	Val	Ser	Gln	Pro	Arg	Gly	Pro	Asn	Glu	Lys	Arg		
575					580					585					590		
taa	ttac	aatcaggcta	ccagaggaag	ccttttggtcc	taacgagaag	agataattac	1892										
*																	
591																	
aatcaggcta	ccaaaggaag	cactaacttt	ggtgctttca	agttggcaag	gagtgcattt	1952											
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gac	gac	cag	ctg	ctg	cag	aag	ctc	agg	gcc	agt	cgc	cgc	cgc	ttc	cag	98
Asp	Asp	Gln	Leu	Leu	Gln	Lys	Leu	Arg	Ala	Ser	Arg	Arg	Arg	Phe	Gln	
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agg	cgc	atg	cag	cgg	ctg	ata	gag	aag	tac	aac	cag	ccc	ttc	gag	gac	146
Arg	Arg	Met	Gln	Arg	Leu	Ile	Glu	Lys	Tyr	Asn	Gln	Pro	Phe	Glu	Asp	
31					36					41					46	
acc	ccg	gtg	gtg	caa	atg	gcc	acg	ctg	acc	tac	gag	acg	cca	cag	gga	194
Thr	Pro	Val	Val	Gln	Met	Ala	Thr	Leu	Thr	Tyr	Glu	Thr	Pro	Gln	Gly	
47					52					57					62	
ttg	aga	att	tgg	ggc	gga	aga	cta	ata	aag	gaa	aga	aac	gaa	gga	gag	242
Leu	Arg	Ile	Trp	Gly	Gly	Arg	Leu	Ile	Lys	Glu	Arg	Asn	Glu	Gly	Glu	
63					68					73					78	
atc	cag	gac	tcc	tcc	atg	aag	ccc	gcg	gac	agg	aca	gat	ggc	tcc	gtg	290
Ile	Gln	Asp	Ser	Ser	Met	Lys	Pro	Ala	Asp	Arg	Thr	Asp	Gly	Ser	Val	
79					84					89					94	
caa	gct	gca	gcc	tgg	ggc	cct	gag	ctt	ccc	tgc	cac	cgc	aca	gtc	ctg	338
Gln	Ala	Ala	Ala	Trp	Gly	Pro	Glu	Leu	Pro	Ser	His	Arg	Thr	Val	Leu	
95					100					105					110	
gga	gcc	gat	tca	aaa	agc	ggc	gag	gtc	gat	gcc	acg	tca	gac	cag	gaa	386
Gly	Ala	Asp	Ser	Lys	Ser	Gly	Glu	Val	Asp	Ala	Thr	Ser	Asp	Gln	Glu	
111					116					121					126	
gag	tca	gtt	gct	tgg	gcc	tta	gca	cct	gca	gtg	cct	caa	agc	cct	ttg	434
Glu	Ser	Val	Ala	Trp	Ala	Leu	Ala	Pro	Ala	Val	Pro	Gln	Ser	Pro	Leu	
127					132					137					142	
aaa	aat	gaa	tta	aga	agg	aaa	tac	ttg	acc	caa	gtg	gat	ata	ctg	cta	482
Lys	Asn	Glu	Leu	Arg	Arg	Lys	Tyr	Leu	Thr	Gln	Val	Asp	Ile	Leu	Leu	
143					148					153					158	
caa	ggc	gca	gag	tat	ttt	gag	tgt	gca	ggc	aac	aga	gct	gga	agg	gat	530
Gln	Gly	Ala	Glu	Tyr	Phe	Glu	Cys	Ala	Gly	Asn	Arg	Ala	Gly	Arg	Asp	
159					164					169					174	
gta	cgt	gtg	act	ccg	ctg	cct	tca	ctg	gcc	tca	cct	gcc	gtg	cct	gcc	578
Val	Arg	Val	Thr	Pro	Leu	Pro	Ser	Leu	Ala	Ser	Pro	Ala	Val	Pro	Ala	
175					180					185					190	
ccc	gga	tac	tgc	agt	cgt	atc	tcc	aga	aag	agt	cct	ggc	gac	cca	gcg	626
Pro	Gly	Tyr	Cys	Ser	Arg	Ile	Ser	Arg	Lys	Ser	Pro	Gly	Asp	Pro	Ala	
191					196					201					206	
aaa	cca	gct	tca	tct	ccc	aga	gaa	tgg	gat	cct	ttg	cat	cct	tcc	tcc	674
Lys	Pro	Ala	Ser	Ser	Pro	Arg	Glu	Trp	Asp	Pro	Leu	His	Pro	Ser	Ser	



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Thr Asp Met Ala Leu Val Pro Arg Asn Asp Ser Leu Ser Leu Gln Glu				
223	228	233	238	
acc agt agc agc agc ttc tta agc agc cag ccc ttt gaa gat gat gac				770
Thr Ser Ser Ser Ser Phe Leu Ser Ser Gln Pro Phe Glu Asp Asp Asp				
239	244	249	254	
att tgc aat gtg acc atc agt gac ctg tac gca ggg atg ctg cac tcc				818
Ile Cys Asn Val Thr Ile Ser Asp Leu Tyr Ala Gly Met Leu His Ser				
255	260	265	270	
atg agc cgg ctg ttg agc aca aag cca tca agc atc atc tcc acc aaa				866
Met Ser Arg Leu Leu Ser Thr Lys Pro Ser Ser Ile Ile Ser Thr Lys				
271	276	281	286	
acg ttc atc atg caa aac tgg aac tgc agg agg agg cac aga tat aag				914
Thr Phe Ile Met Gln Asn Trp Asn Cys Arg Arg Arg His Arg Tyr Lys				
287	292	297	302	
agc agg atg aac aaa aca tat tgc aaa gga gcc aga cgt tct cag agg				962
Ser Arg Met Asn Lys Thr Tyr Cys Lys Gly Ala Arg Arg Ser Gln Arg				
303	308	313	318	
agc tcc aag gag aac ttc ata ccc tgc tct gag cct gtg aaa ggg aca				1010
Ser Ser Lys Glu Asn Phe Ile Pro Cys Ser Glu Pro Val Lys Gly Thr				
319	324	329	334	
ggg gca tta aga gat tgc aag aac gta tta gat gtt tct tgc cgt aag				1058
Gly Ala Leu Arg Asp Cys Lys Asn Val Leu Asp Val Ser Cys Arg Lys				
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aca ggt tta aaa ttg gaa aaa gct ttt ctt gaa gtc aac aga ccc caa				1106
Thr Gly Leu Lys Leu Glu Lys Ala Phe Leu Glu Val Asn Arg Pro Gln				
351	356	361	366	
atc cat aag tta gat cca agt tgg aag gag cgc aaa gtg aca ccc tcg				1154
Ile His Lys Leu Asp Pro Ser Trp Lys Glu Arg Lys Val Thr Pro Ser				
367	372	377	382	
aag tat tct tcc ttg att tac ttc gac tcc agt gca aca tat aat ctt				1202
Lys Tyr Ser Ser Leu Ile Tyr Phe Asp Ser Ser Ala Thr Tyr Asn Leu				
383	388	393	398	
gat gag gaa aat aga ttt agg aca tta aaa tgg tta att tct cct gta				1250
Asp Glu Glu Asn Arg Phe Arg Thr Leu Lys Trp Leu Ile Ser Pro Val				
399	404	409	414	
aaa ata gtt tcc aga cca aca ata cga cag ggc cat gga gag aac cgt				1298
Lys Ile Val Ser Arg Pro Thr Ile Arg Gln Gly His Gly Glu Asn Arg				
415	420	425	430	
cag agg gag att gaa atc cga ttt gat cag ctt cat cgg gaa tat tgc				1346
Gln Arg Glu Ile Glu Ile Arg Phe Asp Gln Leu His Arg Glu Tyr Cys				
431	436	441	446	

ctg agt ccc agg aac cag cct cgc cgg atg tgc ctc ccg gac tcc tgg	1394
Leu Ser Pro Arg Asn Gln Pro Arg Arg Met Cys Leu Pro Asp Ser Trp	
447 452 457 462	
gcc atg aac atg tac aga ggg ggt cct gcg agt cct ggt ggc ctt cag	1442
Ala Met Asn Met Tyr Arg Gly Gly Pro Ala Ser Pro Gly Gly Leu Gln	
463 468 473 478	
ggc tta gaa acc cgc agg ctg agt tta cct tcc agc aaa gca aaa gca	1490
Gly Leu Glu Thr Arg Arg Leu Ser Leu Pro Ser Ser Lys Ala Lys Ala	
479 484 489 494	
aaa agt tta agt gag gct ttt gaa aac cta ggc aaa aga tct ctg gaa	1538
Lys Ser Leu Ser Glu Ala Phe Glu Asn Leu Gly Lys Arg Ser Leu Glu	
495 500 505 510	
gca ggt agg tgc ctg ccc aag agc gat tca tct tca tca ctt cca aag	1586
Ala Gly Arg Cys Leu Pro Lys Ser Asp Ser Ser Ser Ser Leu Pro Lys	
511 516 521 526	
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Thr Asn Pro Thr His Ser Ala Thr Arg Pro Gln Gln Thr Ser Asp Leu	
527 532 537 542	
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His Val Gln Gly Asn Ser Ser Gly Ile Phe Arg Lys Ser Val Ser Pro	
543 548 553 558	
agc aaa act ctt tca gtc cca gat aaa gaa gtg cca ggc cac gga agg	1730
Ser Lys Thr Leu Ser Val Pro Asp Lys Glu Val Pro Gly His Gly Arg	
559 564 569 574	
aat cgt tac gat gaa att aaa gaa gaa ttt gac aag ctt cat caa aag	1778
Asn Arg Tyr Asp Glu Ile Lys Glu Glu Phe Asp Lys Leu His Gln Lys	
575 580 585 590	
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Tyr Cys Leu Lys Ser Pro Gly Gln Met Thr Val Pro Leu Cys Ile Gly	
591 596 601 606	
gtg tct aca gat aaa gca agt atg gaa gtt cga tat caa aca gaa ggc	1874
Val Ser Thr Asp Lys Ala Ser Met Glu Val Arg Tyr Gln Thr Glu Gly	
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Phe Leu Gly Lys Leu Asn Pro Asp Pro His Phe Gln Gly Phe Gln Lys	
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Leu Pro Ser Ser Pro Leu Gly Cys Arg Lys Ser Leu Leu Gly Ser Thr	
639 644 649 654	
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Ala Ile Glu Ala Pro Ser Ser Thr Cys Val Ala Arg Ala Ile Thr Arg	
655 660 665 670	

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Asp Gly Thr Arg Asp His Gln Phe Pro Ala Lys Arg Pro Arg Leu Ser	
671 676 681 686	
gaa ccc cag ggc tcc gga cgc cag ggc aat tcc ctg ggt gcc tca gat	2114
Glu Pro Gln Gly Ser Gly Arg Gln Gly Asn Ser Leu Gly Ala Ser Asp	
687 692 697 702	
ggg gtg gac aac acc gtc aga ccg gga gac cag ggc agc tct tca cag	2162
Gly Val Asp Asn Thr Val Arg Pro Gly Asp Gln Gly Ser Ser Ser Gln	
703 708 713 718	
ccc aac tca gaa gag aga gga gag aac acg tct tac agg atg gaa gag	2210
Pro Asn Ser Glu Glu Arg Gly Glu Asn Thr Ser Tyr Arg Met Glu Glu	
719 724 729 734	
aaa agt gat ttc atg cta gaa aaa ttg gaa act aaa agt gtg tag cta	2258
Lys Ser Asp Phe Met Leu Glu Lys Leu Glu Thr Lys Ser Val *	
735 740 745	
ggttatttcg gagtgttatt tatcttccca cttgctctct gtttgtattt ttgttttgtt	2318
tttgattctt gagactgtga ggacttggtt gacttctctg cccttaaagt aaatattagt	2378
gaaattgggtt ccatcagaga taacctcgag ttcttggtgt agaaattatg tgaataaagt	2438
tgctcaatta gaattttaaa aaaaaaaaaa a	2469

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 <213> Homo sapiens

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atg gac ccg gcg ctg gca gcc caa atg agc gag gct gtg gcc gaa aag	106
Met Asp Pro Ala Leu Ala Ala Gln Met Ser Glu Ala Val Ala Glu Lys	
1 5 10 15	
atg ctc cag tac ccg ccg gac aca gca ggc tgg aag att tgc ccg gaa	154
Met Leu Gln Tyr Arg Arg Asp Thr Ala Gly Trp Lys Ile Cys Arg Glu	
17 22 27 32	
ggc aat gga gtt tca gtt tcc tgg agg cca tct gtg gag ttt cca ggg	202
Gly Asn Gly Val Ser Val Ser Trp Arg Pro Ser Val Glu Phe Pro Gly	
33 38 43 48	
aac ctg tac cga gga gaa ggc att gta tat ggg aca cta gag gag gtg	250
Asn Leu Tyr Arg Gly Glu Gly Ile Val Tyr Gly Thr Leu Glu Glu Val	
49 54 59 64	

tgg gac tgt gtg aag cca gct gtt gga ggc cta cga gtg aag tgg gat	298
Trp Asp Cys Val Lys Pro Ala Val Gly Gly Leu Arg Val Lys Trp Asp	
65 70 75 80	
gag aat gtg acc ggt ttt gaa att atc caa agc atc act gac acc ctg	346
Glu Asn Val Thr Gly Phe Glu Ile Ile Gln Ser Ile Thr Asp Thr Leu	
81 86 91 96	
tgt gta agc aga acc tcc act ccc tcc gct gcc atg aag ctc att tct	394
Cys Val Ser Arg Thr Ser Thr Pro Ser Ala Ala Met Lys Leu Ile Ser	
97 102 107 112	
ccc aga gat ttt gtg gac ttg gtg cta gtc aag aga tat gag gat ggg	442
Pro Arg Asp Phe Val Asp Leu Val Leu Val Lys Arg Tyr Glu Asp Gly	
113 118 123 128	
acc atc agt tcc aac gcc acc cat gtg gag cat ccg tta tgt ccc ccg	490
Thr Ile Ser Ser Asn Ala Thr His Val Glu His Pro Leu Cys Pro Pro	
129 134 139 144	
aag cca ggt ttt gtg aga gga ttt aac cat cct tgt ggt tgc ttc tgt	538
Lys Pro Gly Phe Val Arg Gly Phe Asn His Pro Cys Gly Cys Phe Cys	
145 150 155 160	
gaa cct ctt cca ggg gaa ccc acc aag acc aac ctg gtc aca ttc ttc	586
Glu Pro Leu Pro Gly Glu Pro Thr Lys Thr Asn Leu Val Thr Phe Phe	
161 166 171 176	
cat acc gac ctc agc ggt tac ctc cca cag aac gtg gtg gac tcc ttc	634
His Thr Asp Leu Ser Gly Tyr Leu Pro Gln Asn Val Val Asp Ser Phe	
177 182 187 192	
ttc ccc cgc agc atg acc cgg ttt tat gcc aac ctt cag aaa gca gtg	682
Phe Pro Arg Ser Met Thr Arg Phe Tyr Ala Asn Leu Gln Lys Ala Val	
193 198 203 208	
aag caa ttc cat gag taa tgctat cgttacttct tggcaaagaa ctcccgtgac	736
Lys Gln Phe His Glu *	
209 214	
tcacgagga gctccagctg ttgggacacc aaggagcctg ggagcacgca gaggcctgtg	796
ttcactcttt ggaacaagct gatggactgc gcatctctga gaatgccaac cagaggcggc	856
agccaccct tctgctcc tgcacctc agggttggcg tgtgatgagc cattcatgtg	916
ttccaaactc catctgctg ttacccaac acgctctcc tggcagggtg gaccaggcc	976
tctaaccatc tgacagagac tcggcctgga caccatgcga tgcactctgg caccaaggct	1036
ttatgtgcc atcactctca gagaccagct ttcctgact gtcatagaga atcatcatcg	1096
ccactgaaaa ccaggccctg ttgccttta agcatgtacc gtcctctcag tctgtgctg	1156
cagcccccca aatatatttt tctgatatag aaaaaaaaaa aaaaa	1201

<210> 18  
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 <212> DNA  
 <213> Homo sapiens

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<220>  
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 ccgaacatcg tgaagttgca caagtactgg ctggatacct ctgaggcctg cgcgagggtc 180  
 atcttcatca cagagtacgt gtcatacaggc agcctcaagc aattcctcaa aaagaccaag 240  
 aagaaccaca aggcc atg aac gcc cgg gcc tgg aag cgc tgg tgc acg cag 291  
                   Met Asn Ala Arg Ala Trp Lys Arg Trp Cys Thr Gln  
                   1                  5                  10  
 atc ctg tct gcg ctc agc ttc ctg cac gcc tgc acc ccc cca atc atc 339  
 Ile Leu Ser Ala Leu Ser Phe Leu His Ala Cys Thr Pro Pro Ile Ile  
   13                  18                  23                  28  
 cac ggg aac ctg acc agc gac acc atc ttc att cag cac aac ggc ctc 387  
 His Gly Asn Leu Thr Ser Asp Thr Ile Phe Ile Gln His Asn Gly Leu  
   29                  34                  39                  44  
 atc aag atc ggc tcc gtg tgg cac cga atc ttc tcc aat gca ctt cca 435  
 Ile Lys Ile Gly Ser Val Trp His Arg Ile Phe Ser Asn Ala Leu Pro  
   45                  50                  55                  60  
 gat gat ctc cga agc ccc atc cgc gct gag cga gag gaa ctt cgg aac 483  
 Asp Asp Leu Arg Ser Pro Ile Arg Ala Glu Arg Glu Glu Leu Arg Asn  
   61                  66                  71                  76  
 ctg cac ttc ttc ccc cca gag tat gga gag gtg gcc gat ggg acc gct 531  
 Leu His Phe Phe Pro Pro Glu Tyr Gly Glu Val Ala Asp Gly Thr Ala  
   77                  82                  87                  92  
 gtg gac atc ttc tcc ttt ggg atg tgt gcg ctg gag atg gct gta ctg 579  
 Val Asp Ile Phe Ser Phe Gly Met Cys Ala Leu Glu Met Ala Val Leu  
   93                  98                 103                 108  
 gaa atc cag acc aat ggg gac acc cgg gtc aca gag gag gcc att gct 627  
 Glu Ile Gln Thr Asn Gly Asp Thr Arg Val Thr Glu Glu Ala Ile Ala  
 109                 114                 119                 124

cgc gcc agg cac tcg ctg agt gac ccc aac atg cgg gag ttc atc ctt	675
Arg Ala Arg His Ser Leu Ser Asp Pro Asn Met Arg Glu Phe Ile Leu	
125 130 135 140	
tgc tgc ctg gcc cgg gac cct gcc cgc cgg ccc tct gcc cac agc ctc	723
Cys Cys Leu Ala Arg Asp Pro Ala Arg Arg Pro Ser Ala His Ser Leu	
141 146 151 156	
ctc ttc cac cgc gtg ctc ttc gag gtg cac tcg ctg aag ctc ctg gca	771
Leu Phe His Arg Val Leu Phe Glu Val His Ser Leu Lys Leu Leu Ala	
157 162 167 172	
gcc cac tgc ttc atc cag cac cag tac ctc atg cct gag aat gtg gtg	819
Ala His Cys Phe Ile Gln His Gln Tyr Leu Met Pro Glu Asn Val Val	
173 178 183 188	
gag gag aag acc aag gcc atg gac ctg cac gcg gtc ttg gcg gag ctt	867
Glu Glu Lys Thr Lys Ala Met Asp Leu His Ala Val Leu Ala Glu Leu	
189 194 199 204	
ccc cgg ccc cgc agg ccc ccg ctg cag tgg cgg tac tcg gaa gtc tcc	915
Pro Arg Pro Arg Arg Pro Pro Leu Gln Trp Arg Tyr Ser Glu Val Ser	
205 210 215 220	
ttc atg gag ctg gac aaa ttc ctg gag gat gtc agg aat gga atc tac	963
Phe Met Glu Leu Asp Lys Phe Leu Glu Asp Val Arg Asn Gly Ile Tyr	
221 226 231 236	
cca ctg atg aac ttt gca gcc act cga ccc ctg ggg ctg ccc cgt gtg	1011
Pro Leu Met Asn Phe Ala Ala Thr Arg Pro Leu Gly Leu Pro Arg Val	
237 242 247 252	
ctg gcc cca ccc ccg gag gag gtc caa aag gcc aag acc ccg acg cca	1059
Leu Ala Pro Pro Pro Glu Glu Val Gln Lys Ala Lys Thr Pro Thr Pro	
253 258 263 268	
gag ccc ttt gac tct gag acc aga aag gtc atc cag atg cag tgc aac	1107
Glu Pro Phe Asp Ser Glu Thr Arg Lys Val Ile Gln Met Gln Cys Asn	
269 274 279 284	
ctg gag aga agc gag gac aag gcg cgc tgg cat ctc act ctg ctt ctg	1155
Leu Glu Arg Ser Glu Asp Lys Ala Arg Trp His Leu Thr Leu Leu Leu	
285 290 295 300	
gtg ctg gaa gac cgg ctg cac cgg cag ctg acc tac gac ctg ctc cca	1203
Val Leu Glu Asp Arg Leu His Arg Gln Leu Thr Tyr Asp Leu Leu Pro	
301 306 311 316	
acg gac agc gcc cag gac ctc gcc tcg gag ctc gtg cac tat ggc ttc	1251
Thr Asp Ser Ala Gln Asp Leu Ala Ser Glu Leu Val His Tyr Gly Phe	
317 322 327 332	
ctc cac gag cac gac cgg atg aag ctg gcc gcc ttc ctg gag agc acc	1299
Leu His Glu His Asp Arg Met Lys Leu Ala Ala Phe Leu Glu Ser Thr	
333 338 343 348	

ttc ctc aag tac cgt ggg acc cag gcc tga c ccggagcccc agccccaggg 1350  
Phe Leu Lys Tyr Arg Gly Thr Gln Ala \*  
349 354

gaccatgccg ggggtgctgcc cgggcaggcc atgttgggga gactccagca ccgtggggct 1410

gccctcctcc atgcgcctgg gagcacaaag gccccggtag tgaaggaacc ccccgctctcc 1470

tgagagtggg gctgaccctg ccttgggcgc c 1501

<210> 19  
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<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (362)..(1966)

<220>  
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cggactccgg cggaatgggg ggtgtggctg ctccgccagg gtccccaggg tgggagagcg 120

gctccgcggc caccgatgcc cggaccccct ctgtcttctg ctagacatgc tcttcctctc 180

ggtagattgt tttgctgtcg tcgcgggccg gattcgtggc cttagtcacg cccctgggga 240

ggaggaagga gccggggcgc ttcgatctgt gtggcctgga tagggcaggg caaaggggaa 300

ctgaccgct tcgtcccggt gcctcctcct tttggggcat gttgatccgc ggctgcgctc 360

c atg ttc cag ttt cat gca ggc tct tgg gaa agc tgg tgc tgc tgc 406  
Met Phe Gln Phe His Ala Gly Ser Trp Glu Ser Trp Cys Cys Cys  
1 5 10

tgc ctg att ccc gcc gac aga cct tgg gac cgg ggc caa cac tgg cag 454  
Cys Leu Ile Pro Ala Asp Arg Pro Trp Asp Arg Gly Gln His Trp Gln  
16 21 26 31

ctg gag atg gcg gac acg aga tcc gtg cac gag act agg ttt gag gcg 502  
Leu Glu Met Ala Asp Thr Arg Ser Val His Glu Thr Arg Phe Glu Ala  
32 37 42 47

gcc gtg aag gtg atc cag agt ttg ccg aag aat ggt tca ttc cag cca 550  
Ala Val Lys Val Ile Gln Ser Leu Pro Lys Asn Gly Ser Phe Gln Pro  
48 53 58 63

aca aat gaa atg atg ctt aaa ttt tat agc ttc tat aag cag gca act 598

Thr	Asn	Glu	Met	Met	Leu	Lys	Phe	Tyr	Ser	Phe	Tyr	Lys	Gln	Ala	Thr		
64					69					74					79		
gaa	gga	ccc	tgt	aaa	ctt	tca	agg	cct	gga	ttt	tgg	gat	cct	att	gga	646	
Glu	Gly	Pro	Cys	Lys	Leu	Ser	Arg	Pro	Gly	Phe	Trp	Asp	Pro	Ile	Gly		
80					85					90					95		
aga	tat	aaa	tgg	gat	gct	tgg	agt	tca	ctg	ggt	gat	atg	acc	aaa	gag	694	
Arg	Tyr	Lys	Trp	Asp	Ala	Trp	Ser	Ser	Leu	Gly	Asp	Met	Thr	Lys	Glu		
96					101					106					111		
gaa	gcc	atg	att	gca	tat	gtt	gaa	gaa	atg	aaa	aag	att	att	gaa	act	742	
Glu	Ala	Met	Ile	Ala	Tyr	Val	Glu	Glu	Met	Lys	Lys	Ile	Ile	Glu	Thr		
112					117					122					127		
atg	cca	atg	act	gag	aaa	gtt	gaa	gaa	ttg	ctg	cgt	gtc	ata	ggt	cca	790	
Met	Pro	Met	Thr	Glu	Lys	Val	Glu	Glu	Leu	Leu	Arg	Val	Ile	Gly	Pro		
128					133					138					143		
ttt	tat	gaa	att	gtc	gag	gac	aaa	aag	agt	ggc	agg	agt	tct	gat	ata	838	
Phe	Tyr	Glu	Ile	Val	Glu	Asp	Lys	Lys	Ser	Gly	Arg	Ser	Ser	Asp	Ile		
144					149					154					159		
ccc	tca	gtc	cga	ctg	gag	aaa	atc	tct	aaa	tgt	tta	gaa	gat	ctt	ggt	886	
Pro	Ser	Val	Arg	Leu	Glu	Lys	Ile	Ser	Lys	Cys	Leu	Glu	Asp	Leu	Gly		
160					165					170					175		
aat	gtt	ctc	act	tct	act	ccg	aac	gcc	aaa	acc	gtt	aat	ggt	aaa	gct	934	
Asn	Val	Leu	Thr	Ser	Thr	Pro	Asn	Ala	Lys	Thr	Val	Asn	Gly	Lys	Ala		
176					181					186					191		
gaa	agc	agt	gac	agt	gga	gcc	gag	tct	gag	gaa	gaa	gag	gcc	caa	gaa	982	
Glu	Ser	Ser	Asp	Ser	Gly	Ala	Glu	Ser	Glu	Glu	Glu	Glu	Ala	Gln	Glu		
192					197					202					207		
gaa	gtg	aaa	gga	gca	gac	caa	agt	gat	aat	gat	aag	aaa	atg	atg	aag	1030	
Glu	Val	Lys	Gly	Ala	Asp	Gln	Ser	Asp	Asn	Asp	Lys	Lys	Met	Met	Lys		
208					213					218					223		
aag	tca	gca	gac	cat	aag	aat	ttg	gaa	gtc	att	gtc	act	aat	ggc	tat	1078	
Lys	Ser	Ala	Asp	His	Lys	Asn	Leu	Glu	Val	Ile	Val	Thr	Asn	Gly	Tyr		
224					229					234					239		
gat	aaa	gat	ggc	ttt	gtt	cag	gat	ata	cag	aat	gac	att	cat	gcc	agt	1126	
Asp	Lys	Asp	Gly	Phe	Val	Gln	Asp	Ile	Gln	Asn	Asp	Ile	His	Ala	Ser		
240					245					250					255		
tct	tcc	ctg	aat	ggc	aga	agc	act	gaa	gaa	gta	aag	ccc	att	gat	gaa	1174	
Ser	Ser	Leu	Asn	Gly	Arg	Ser	Thr	Glu	Glu	Val	Lys	Pro	Ile	Asp	Glu		
256					261					266					271		
aac	ttg	ggg	caa	act	gga	aaa	tct	gct	gtt	tgc	att	cac	caa	gat	ata	1222	
Asn	Leu	Gly	Gln	Thr	Gly	Lys	Ser	Ala	Val	Cys	Ile	His	Gln	Asp	Ile		
272					277					282					287		
aat	gat	gat	cat	gtt	gaa	gat	gtt	aca	gga	att	cag	cat	ttg	aca	agc	1270	
Asn	Asp	Asp	His	Val	Glu	Asp	Val	Thr	Gly	Ile	Gln	His	Leu	Thr	Ser		



288	293	298	303	
gat tca gac agt gaa gtt tac tgt gat tct atg gaa caa ttt gga caa	1318			
Asp Ser Asp Ser Glu Val Tyr Cys Asp Ser Met Glu Gln Phe Gly Gln				
304	309	314	319	
gaa gag tct tta gac agc ttt acg tcc aac aat gga cca ttt cag tat	1366			
Glu Glu Ser Leu Asp Ser Phe Thr Ser Asn Asn Gly Pro Phe Gln Tyr				
320	325	330	335	
tac ttg ggt ggt cat tcc agt caa ccc atg gaa aat tct gga ttt cgt	1414			
Tyr Leu Gly Gly His Ser Ser Gln Pro Met Glu Asn Ser Gly Phe Arg				
336	341	346	351	
gaa gat att caa gta cct cct gga aat ggc aac att ggg aat atg cag	1462			
Glu Asp Ile Gln Val Pro Pro Gly Asn Gly Asn Ile Gly Asn Met Gln				
352	357	362	367	
gtg gtt gca gtt gaa gga aaa ggt gaa gtc aag cat gga gga gaa gat	1510			
Val Val Ala Val Glu Gly Lys Gly Glu Val Lys His Gly Gly Glu Asp				
368	373	378	383	
ggc agg aat aac agc gga gca cca cac cgg gag aag cga ggc gga gaa	1558			
Gly Arg Asn Asn Ser Gly Ala Pro His Arg Glu Lys Arg Gly Gly Glu				
384	389	394	399	
act gac gaa ttc tct aat gtt aga aga gga aga gga cat agg atg caa	1606			
Thr Asp Glu Phe Ser Asn Val Arg Arg Gly Arg Gly His Arg Met Gln				
400	405	410	415	
cac ttg agc gaa gga acc aag ggc cgg cag gtg gga agt gga ggt gat	1654			
His Leu Ser Glu Gly Thr Lys Gly Arg Gln Val Gly Ser Gly Gly Asp				
416	421	426	431	
ggg gag cgc tgg ggc tcc gac aga ggg tcc cga ggc agc ctc aat gag	1702			
Gly Glu Arg Trp Gly Ser Asp Arg Gly Ser Arg Gly Ser Leu Asn Glu				
432	437	442	447	
cag atc gcc ctc gtg ctg atg aga ctg cag gag gac atg cag aat gtc	1750			
Gln Ile Ala Leu Val Leu Met Arg Leu Gln Glu Asp Met Gln Asn Val				
448	453	458	463	
ctt cag aga ctg cag aaa ctg gaa acg ctg act gct ttg cag gca aaa	1798			
Leu Gln Arg Leu Gln Lys Leu Glu Thr Leu Thr Ala Leu Gln Ala Lys				
464	469	474	479	
tca tca aca tca aca ttg cag act gct cct cag ccc acc tca cag aga	1846			
Ser Ser Thr Ser Thr Leu Gln Thr Ala Pro Gln Pro Thr Ser Gln Arg				
480	485	490	495	
cca tct tgg tgg ccc ttc gag atg tct cct ggt gtg cta acg ttt gcc	1894			
Pro Ser Trp Trp Pro Phe Glu Met Ser Pro Gly Val Leu Thr Phe Ala				
496	501	506	511	
atc ata tgg cct ttt att gca cag tgg ttg gtg tat tta tac tat caa	1942			
Ile Ile Trp Pro Phe Ile Ala Gln Trp Leu Val Tyr Leu Tyr Tyr Gln				
512	517	522	527	

aga agg aga aga aaa ctg aac tga ggaaaatggg gttttcctca agaagactac 1996  
 Arg Arg Arg Arg Lys Leu Asn \*  
 528 533

tggaactgga tgacctcaga atgaactgga ttgtggtgtt cacaagaaaa tcttagtttg 2056  
 tgatgattac attgcttttt gttgtccagt agtttagttt gtgtacatat atacacatat 2116  
 atattttgca ctacacaaac gataacattt taaggactaa tattgctgat acttgaataa 2176  
 tcaatctcta ctagggtata agtagtatac acagatttac cctgcccttg aacttgaagg 2236  
 acattaaatt attaatgatc atttggtaac atgtttacct gattatcttc catagagtaa 2296  
 cataagctgc ttttcaaagg taccgttgtg ataatgagat caagtttata agttattcgt 2356  
 ttttaattttt taaactaaat aaaagaaaga atgcaaacca ggagtgactt tcaaagaga 2416  
 cgtaataggg ctttatatgt tagtctcgaa gttgccatgg catgtattgc ggctcgtcta 2476  
 gaggatcaca tnnacnnacg cgtgcatgcg acgt 2510

<210> 20  
 <211> 2363  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (186)..(1676)

<400> 20  
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 cgccccaggc gcgcgcgcgc cgccccgcgc gctctgaggt tgctcgcgcg cccccgcga 180  
 tcgcc atg gat cgg atg aag aag atc aaa cgg cag ctg tca atg aca 227  
 Met Asp Arg Met Lys Lys Ile Lys Arg Gln Leu Ser Met Thr  
 1 5 10

ctc cga ggt ggc cga ggc ata gac aag acc aat ggt gcc cct gag cag 275  
 Leu Arg Gly Gly Arg Gly Ile Asp Lys Thr Asn Gly Ala Pro Glu Gln  
 15 20 25 30

ata ggc ctg gat gag agt ggt ggt ggt ggc ggc agt gac cct gga gag 323  
 Ile Gly Leu Asp Glu Ser Gly Gly Gly Gly Gly Ser Asp Pro Gly Glu  
 31 36 41 46

gcc ccc aca cgt gct gct cct ggg gaa ctt cgt tct gca cgg ggc cca 371  
 Ala Pro Thr Arg Ala Ala Pro Gly Glu Leu Arg Ser Ala Arg Gly Pro  
 47 52 57 62

ctc agc tct gca cca gag att gtg cac gag gac ttg aag atg ggg tct	419
Leu Ser Ser Ala Pro Glu Ile Val His Glu Asp Leu Lys Met Gly Ser	
63 68 73 78	
gat ggg gag agt gac cag gct tca gcc acg tcc tcg gat gag gtg cag	467
Asp Gly Glu Ser Asp Gln Ala Ser Ala Thr Ser Ser Asp Glu Val Gln	
79 84 89 94	
tct cca gtg aga gtg cgt atg cgc aac cat ccc cca cgc aag atc tcc	515
Ser Pro Val Arg Val Arg Met Arg Asn His Pro Pro Arg Lys Ile Ser	
95 100 105 110	
act gag gac atc aac aag cgc cta tca cta cca gct gac atc cgg ctg	563
Thr Glu Asp Ile Asn Lys Arg Leu Ser Leu Pro Ala Asp Ile Arg Leu	
111 116 121 126	
cct gag ggc tac ctg gag aag ctg acc ctc aat agc ccc atc ttt gac	611
Pro Glu Gly Tyr Leu Glu Lys Leu Thr Leu Asn Ser Pro Ile Phe Asp	
127 132 137 142	
aag ccc ctc agc cgc cgc ctc cgt cgt gtc agc cta tct gag att ggc	659
Lys Pro Leu Ser Arg Arg Leu Arg Arg Val Ser Leu Ser Glu Ile Gly	
143 148 153 158	
ttt ggg aaa ctg gag acc tac att aag ctg gac aaa ctg ggc gag ggt	707
Phe Gly Lys Leu Glu Thr Tyr Ile Lys Leu Asp Lys Leu Gly Glu Gly	
159 164 169 174	
acc tat gcc acc gtc tac aaa ggc aaa agc aag ctc aca gac aac ctt	755
Thr Tyr Ala Thr Val Tyr Lys Gly Lys Ser Lys Leu Thr Asp Asn Leu	
175 180 185 190	
gtg gca ctc aag gag atc aga ctg gaa cat gaa gag ggg gca ccc tgc	803
Val Ala Leu Lys Glu Ile Arg Leu Glu His Glu Glu Gly Ala Pro Cys	
191 196 201 206	
acc gcc atc cgg gaa gtg tcc ctg ctc aag gac ctc aaa cac gcc aac	851
Thr Ala Ile Arg Glu Val Ser Leu Leu Lys Asp Leu Lys His Ala Asn	
207 212 217 222	
atc gtt acg cta cat gac att atc cac acg gag aag tcc ctc acc ctt	899
Ile Val Thr Leu His Asp Ile Ile His Thr Glu Lys Ser Leu Thr Leu	
223 228 233 238	
gtc ttt gag tac ctg gac aag gac ctg aag cag tac ctg gat gac tgt	947
Val Phe Glu Tyr Leu Asp Lys Asp Leu Lys Gln Tyr Leu Asp Asp Cys	
239 244 249 254	
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Ala Asp Phe Gly Leu Ala Arg Ala Lys Ser Ile Pro Thr Lys Thr Tyr	
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Ser Asn Glu Val Val Thr Leu Trp Tyr Arg Pro Pro Asp Ile Leu Leu	
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Gly Ser Thr Asp Tyr Ser Thr Gln Ile Asp Met Trp Gly Val Gly Cys	
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Ile Phe Tyr Glu Met Ala Thr Gly Arg Pro Leu Phe Pro Gly Ser Thr	
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Val Glu Glu Gln Leu His Phe Ile Phe Arg Ile Leu Gly Thr Pro Thr	
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Glu Glu Thr Trp Pro Gly Ile Leu Ser Asn Glu Glu Phe Lys Thr Tyr	
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Asn Tyr Pro Lys Tyr Arg Ala Glu Ala Leu Leu Ser His Ala Pro Arg	
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Leu Asp Ser Asp Gly Ala Asp Leu Leu Thr Lys Leu Leu Gln Phe Glu	
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Gly Arg Asn Arg Ile Ser Ala Glu Asp Ala Met Lys His Pro Phe Phe	
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Leu Ser Leu Gly Glu Arg Ile His Lys Leu Pro Asp Thr Thr Ser Ile	
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Phe Ala Leu Lys Glu Ile Gln Leu Gln Lys Glu Ala Ser Leu Arg Ser	
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Ser Ser Met Pro Asp Ser Gly Arg Pro Ala Phe Arg Val Val Asp Thr	
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Glu Phe *	
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 Glu Arg Leu Val Ser Glu Leu Ser Gly Gly Thr Gly Gly Asp Glu Glu  
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 Glu Glu Trp Leu Tyr Gly Asp Glu Asn Glu Val Glu Arg Pro Glu Glu  
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 Glu Asn Ala Ser Ala Asn Pro Pro Ser Gly Ile Glu Asp Glu Thr Ala  
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 Glu Asn Gly Val Pro Lys Pro Lys Val Thr Glu Thr Glu Asp Asp Ser  
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Asp Ser Asp Ser Asp Asp Asp Glu Asp Asp Val His Val Thr Ile Gly	
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Asp Ile Lys Thr Gly Ala Pro Gln Tyr Gly Ser Tyr Gly Thr Ala Pro	
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Val Asn Leu Asn Ile Lys Thr Gly Gly Arg Val Tyr Gly Thr Thr Gly	
103 108 113 118	
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Thr Lys Val Lys Gly Val Asp Leu Asp Ala Pro Gly Ser Ile Asn Gly	
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Arg Lys Pro Gly Ala Asp Leu Ser Asp Tyr Phe Asn Tyr Gly Phe Asn	
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Gln Gln Gly Arg Thr Gly Asn Ser Glu Lys Glu Thr Ala Leu Pro Ser	
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Thr Lys Ala Glu Phe Thr Ser Pro Pro Ser Leu Phe Lys Thr Gly Leu	
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Ser Arg Lys Ala Asn Ser Ser Val Gly Lys Trp Gln Asp Arg Tyr Gly	
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Arg Ala Glu Ser Pro Asp Leu Arg Arg Leu Pro Gly Ala Ile Asp Val	
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Val Ser Thr Ala Pro Pro Leu Ile Pro Pro Pro Gly Ile Pro Ile Thr	
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Arg His Arg Glu Lys Glu Glu Thr Arg His Lys Ser Ser Arg Ser Asn	
503 508 513 518	
agt aga cgt cgc cat gaa agt gaa gaa gga gat agt cac agg aga cac	1757

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Lys His Lys Lys Ser	Lys Arg Ser Lys Glu Gly Lys Glu Ala Gly Ser	
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atg gag caa act gac tgc aaa	411
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Pro Tyr Gln Pro Leu Pro Lys Val Lys His Glu Met Asp Leu Ala Tyr	
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Thr Ser Ser Ser Asp Glu Ser Glu Asp Gly Arg Lys Pro Arg Gln Ser	
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Tyr Asn Ser Arg Glu Thr Leu His Glu Tyr Asn Gln Glu Leu Arg Met	
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Gln Thr Asp Met His Ser Val Ser Arg His Gly Tyr Gln Leu Glu Met	
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184 189 194 199	
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Pro Ala Pro Pro Thr Ser Thr Gln Asp Ser Val His Leu His Asn Ser	
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Trp Val Leu Asn Ser Asn Ile Pro Leu Glu Thr Arg His Phe Leu Phe	
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Lys His Gly Ser Gly Ser Ser Ala Ile Phe Ser Ala Ala Ser Gln Asn	
264 269 274 279	

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Tyr Pro Leu Thr Ser Asn Thr Val Tyr Ser Pro Pro Pro Arg Pro Leu	
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Pro Arg Ser Thr Phe Ser Arg Pro Ala Phe Thr Phe Asn Lys Pro Tyr	
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Ser Leu Leu Gly Ile Tyr Gly Arg Arg Asn Ile Pro Pro Thr His Thr	
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Gln Phe Asp Phe Val Lys Leu Met Asp Gly Lys Gln Leu Val Lys Gln	
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Asp Ser Lys Gly Ser Asp Asp Thr Gln His Ser Pro Arg Asn Leu Ile	
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Leu Thr Ser Leu Gln Glu Thr Gly Phe Ile Glu Tyr Met Asp Gln Gly	
488 493 498 503	
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Gly Gly Asn Gly Glu Tyr Glu Lys Gly His Cys Val Cys Arg His Gly	
568 573 578 583	
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Trp Lys Gly Pro Glu Cys Asp Val Pro Glu Glu Gln Cys Ile Asp Pro	
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Pro Gly Tyr Lys Gly Glu Ile Cys Glu Glu Glu Asp Cys Leu Asp Pro	
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Met Cys Ser Asn His Gly Ile Cys Val Lys Gly Glu Cys His Cys Ser	
632 637 642 647	
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Thr Gly Trp Gly Gly Val Asn Cys Glu Thr Pro Leu Pro Val Cys Gln	
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Ser Cys Asp Pro Lys Trp Thr Gly Ser Asp Cys Ser Thr Glu Leu Cys	
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acc atg gag tgt ggt agc cat gga gtc tgc tca aga gga att tgc cag	2523
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Cys Glu Glu Gly Trp Val Gly Pro Thr Cys Glu Glu Arg Ser Cys His	
712 717 722 727	
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Ser His Cys Thr Glu His Gly Gln Cys Lys Asp Gly Lys Cys Glu Cys	

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Ser Pro Gly Trp Glu	Gly Asp His Cys Thr	Ile Ala His Tyr Leu	Asp	
744	749	754	759	
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760	765	770	775	
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Thr Leu Asp Gln Asn	Gly Trp His Cys Val	Cys Gln Val Gly Trp	Ser	
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792	797	802	807	
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Asp Asn Asp Gly Asp	Gly Leu Thr Asp Cys	Val Asp Pro Asp Cys	Cys	
808	813	818	823	
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Gln Gln Ser Asn Cys	Tyr Ile Ser Pro Leu	Cys Gln Gly Ser Pro	Asp	
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Pro Leu Asp Leu Ile	Gln Gln Ser Gln Thr	Leu Phe Ser Gln His	Thr	
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Ser Arg Leu Phe Tyr	Asp Arg Ile Lys Phe	Leu Ile Gly Lys Asp	Ser	
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888	893	898	903	
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Val Asn Val Ser Phe	Leu His His Ser Asp	Tyr Gly Phe Thr Ile	Ser	
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920	925	930	935	
atc tta atc ttc gac	cga tcc cct ttc ctg	cct gag aag aga aca	ctc	3243
Ile Leu Ile Phe Asp	Arg Ser Pro Phe Leu	Pro Glu Lys Arg Thr	Leu	
936	941	946	951	
tgg ttg cct tgg aat	cag ttt att gtg gta	gag aaa gtc acc atg	cag	3291
Trp Leu Pro Trp Asn	Gln Phe Ile Val Val	Glu Lys Val Thr Met	Gln	
952	957	962	967	

aga gtt gta tca gac ccg cca tcc tgc gat atc tcc aac ttt atc agc	3339
Arg Val Val Ser Asp Pro Pro Ser Cys Asp Ile Ser Asn Phe Ile Ser	
968 973 978 983	
cca aac cct att gtg ctt cct tca ccg ctc aca tca ttt gga ggg tcc	3387
Pro Asn Pro Ile Val Leu Pro Ser Pro Leu Thr Ser Phe Gly Gly Ser	
984 989 994 999	
tgt cca gag agg gga act att gtt cct gag ctg cag gtt gta cag gag	3435
Cys Pro Glu Arg Gly Thr Ile Val Pro Glu Leu Gln Val Val Gln Glu	
1000 1005 1010 1015	
gaa att ccc att ccc tcc agc ttt gtg agg ctg agt tac ctg agc agc	3483
Glu Ile Pro Ile Pro Ser Ser Phe Val Arg Leu Ser Tyr Leu Ser Ser	
1016 1021 1026 1031	
cgc acc cct ggg tat aaa acc ctg cta cgg atc ctt ctg aca cat tca	3531
Arg Thr Pro Gly Tyr Lys Thr Leu Leu Arg Ile Leu Leu Thr His Ser	
1032 1037 1042 1047	
acg att ccc gta ggc atg ata aaa gta cac ctc aca gta gct gtg gaa	3579
Thr Ile Pro Val Gly Met Ile Lys Val His Leu Thr Val Ala Val Glu	
1048 1053 1058 1063	
ggg cga ctc aca cag aag tgg ttt ccc gcc gca att aat ctt gtc tac	3627
Gly Arg Leu Thr Gln Lys Trp Phe Pro Ala Ala Ile Asn Leu Val Tyr	
1064 1069 1074 1079	
aca ttt gct tgg aac aag acc gat atc tat gga cag aag gtt tgg gcc	3675
Thr Phe Ala Trp Asn Lys Thr Asp Ile Tyr Gly Gln Lys Val Trp Gly	
1080 1085 1090 1095	
ctg gca gag gct ttg gta tct gtg gga tat gaa tat gaa acg tgc cct	3723
Leu Ala Glu Ala Leu Val Ser Val Gly Tyr Glu Tyr Glu Thr Cys Pro	
1096 1101 1106 1111	
gac ttt att ctc tgg gag caa agg aca gtc gtt tta caa ggt ttt gag	3771
Asp Phe Ile Leu Trp Glu Gln Arg Thr Val Val Leu Gln Gly Phe Glu	
1112 1117 1122 1127	
atg gat gct tct aac cta gga gac tgg tct ttg aat aag cat cac att	3819
Met Asp Ala Ser Asn Leu Gly Asp Trp Ser Leu Asn Lys His His Ile	
1128 1133 1138 1143	
ttg aat cct caa agt gga atc ata cat aaa ggg aat gga gaa aat atg	3867
Leu Asn Pro Gln Ser Gly Ile Ile His Lys Gly Asn Gly Glu Asn Met	
1144 1149 1154 1159	
ttc att tcc cag cag ccc cca gtc ata tca acc ata atg ggt aat gga	3915
Phe Ile Ser Gln Gln Pro Pro Val Ile Ser Thr Ile Met Gly Asn Gly	
1160 1165 1170 1175	
cac caa agg agt gta gcc tgc acc aac tgc aat ggc cca gcc cac aac	3963
His Gln Arg Ser Val Ala Cys Thr Asn Cys Asn Gly Pro Ala His Asn	
1176 1181 1186 1191	

aac aaa ctc ttt gct cct gtc gcc tta gct tct ggc cct gat ggc agt	4011
Asn Lys Leu Phe Ala Pro Val Ala Leu Ala Ser Gly Pro Asp Gly Ser	
1192 1197 1202 1207	
gtg tat gtt ggc gac ttc aat ttt gta agg aga ata ttt ccc tcg gga	4059
Val Tyr Val Gly Asp Phe Asn Phe Val Arg Arg Ile Phe Pro Ser Gly	
1208 1213 1218 1223	
aac tcc gtt agt att ttg gaa tta agc aca agt cct gct cac aaa tac	4107
Asn Ser Val Ser Ile Leu Glu Leu Ser Thr Ser Pro Ala His Lys Tyr	
1224 1229 1234 1239	
tat ctg gct atg gac cct gtg tct gaa tca ctc tat cta tca gac acc	4155
Tyr Leu Ala Met Asp Pro Val Ser Glu Ser Leu Tyr Leu Ser Asp Thr	
1240 1245 1250 1255	
aat act cgc aaa gtc tac aag ttg aaa tct ctt gtg gag acg aaa gat	4203
Asn Thr Arg Lys Val Tyr Lys Leu Lys Ser Leu Val Glu Thr Lys Asp	
1256 1261 1266 1271	
ctg tcc aag aat ttt gaa gtg gtg gca gga act ggt gat cag tgc ctt	4251
Leu Ser Lys Asn Phe Glu Val Val Ala Gly Thr Gly Asp Gln Cys Leu	
1272 1277 1282 1287	
ccc ttt gac cag agt cat tgt gga gat ggt ggg aga gca tcg gaa gct	4299
Pro Phe Asp Gln Ser His Cys Gly Asp Gly Gly Arg Ala Ser Glu Ala	
1288 1293 1298 1303	
tca ctg aat agc cct cga ggc atc aca gtt gat agg cat gga ttt att	4347
Ser Leu Asn Ser Pro Arg Gly Ile Thr Val Asp Arg His Gly Phe Ile	
1304 1309 1314 1319	
tac ttt gtg gat ggg act atg att cgc aaa att gat gag aat gct gtg	4395
Tyr Phe Val Asp Gly Thr Met Ile Arg Lys Ile Asp Glu Asn Ala Val	
1320 1325 1330 1335	
atc aca act gta atc ggc tca aat ggt ctg act tcc aca caa cca ctg	4443
Ile Thr Thr Val Ile Gly Ser Asn Gly Leu Thr Ser Thr Gln Pro Leu	
1336 1341 1346 1351	
agc tgt gac tca gga atg gac atc act cag gtg cga tta gag tgg cca	4491
Ser Cys Asp Ser Gly Met Asp Ile Thr Gln Val Arg Leu Glu Trp Pro	
1352 1357 1362 1367	
aca gac ctt gca gta aat cct atg gac aat tca ttg tat gtc ttg gat	4539
Thr Asp Leu Ala Val Asn Pro Met Asp Asn Ser Leu Tyr Val Leu Asp	
1368 1373 1378 1383	
aac aac att gtg ctg caa att tct gag aac agg cgt gtt cgg atc atc	4587
Asn Asn Ile Val Leu Gln Ile Ser Glu Asn Arg Arg Val Arg Ile Ile	
1384 1389 1394 1399	
gca gga cgc ccc att cac tgc cag gtg cca ggc atc gat cat ttc ctg	4635
Ala Gly Arg Pro Ile His Cys Gln Val Pro Gly Ile Asp His Phe Leu	
1400 1405 1410 1415	
gtc agc aag gta gca att cac tcc act cta gag tca gcg agg gcc atc	4683

Val Ser Lys Val Ala Ile His Ser Thr Leu Glu Ser Ala Arg Ala Ile	
1416 1421 1426 1431	
agt gtc tcc cac agc ggg ctg ctc ttc ata gct gaa aca gac gag agg	4731
Ser Val Ser His Ser Gly Leu Leu Phe Ile Ala Glu Thr Asp Glu Arg	
1432 1437 1442 1447	
aaa gta aac cgc att cag caa gta acc acc aat ggg gag atc tac atc	4779
Lys Val Asn Arg Ile Gln Gln Val Thr Thr Asn Gly Glu Ile Tyr Ile	
1448 1453 1458 1463	
atc gct ggt gcc ccc act gac tgt gac tgc aaa att gat cca aac tgt	4827
Ile Ala Gly Ala Pro Thr Asp Cys Asp Cys Lys Ile Asp Pro Asn Cys	
1464 1469 1474 1479	
gac tgt ttt tca ggt gat ggt ggc tat gcc aaa gat gca aag atg aaa	4875
Asp Cys Phe Ser Gly Asp Gly Gly Tyr Ala Lys Asp Ala Lys Met Lys	
1480 1485 1490 1495	
gcc cct tcc tcc tta gca gtg tgc cct gat gga acc ctc tat gtg gca	4923
Ala Pro Ser Ser Leu Ala Val Ser Pro Asp Gly Thr Leu Tyr Val Ala	
1496 1501 1506 1511	
gac ctc gga aat gtt cga att cgt acc atc agc agg aac caa gcc cac	4971
Asp Leu Gly Asn Val Arg Ile Arg Thr Ile Ser Arg Asn Gln Ala His	
1512 1517 1522 1527	
ctg aat gac atg aac att tat gag att gct tca ccc gct gat cag gaa	5019
Leu Asn Asp Met Asn Ile Tyr Glu Ile Ala Ser Pro Ala Asp Gln Glu	
1528 1533 1538 1543	
ctg tac cag ttc act gta aat gga acc cac cta cac acc ctg aac ttg	5067
Leu Tyr Gln Phe Thr Val Asn Gly Thr His Leu His Thr Leu Asn Leu	
1544 1549 1554 1559	
ata aca agg gac tat gtt tat aac ttc acc tac aat tct gaa ggt gac	5115
Ile Thr Arg Asp Tyr Val Tyr Asn Phe Thr Tyr Asn Ser Glu Gly Asp	
1560 1565 1570 1575	
ttg ggc gcg att acc agc agc aat ggc aat tca gtg cac att cgc cgt	5163
Leu Gly Ala Ile Thr Ser Ser Asn Gly Asn Ser Val His Ile Arg Arg	
1576 1581 1586 1591	
gat gca ggc gga atg ccg cta tgg ctt gtg gtg cct ggc gga caa gta	5211
Asp Ala Gly Gly Met Pro Leu Trp Leu Val Val Pro Gly Gly Gln Val	
1592 1597 1602 1607	
tac tgg ctg act ata agc agc aat gga gtc ctg aaa aga gtg tca gcc	5259
Tyr Trp Leu Thr Ile Ser Ser Asn Gly Val Leu Lys Arg Val Ser Ala	
1608 1613 1618 1623	
caa ggc tat aat ccg gcc tta atg acc tat cca gga aac aca ggg ctt	5307
Gln Gly Tyr Asn Pro Ala Leu Met Thr Tyr Pro Gly Asn Thr Gly Leu	
1624 1629 1634 1639	
ctg gct acc aaa agt aac gaa aat gga tgg aca acc gtt tat gag tat	5355
Leu Ala Thr Lys Ser Asn Glu Asn Gly Trp Thr Thr Val Tyr Glu Tyr	

1640	1645	1650	1655	
gac ccc gag gga cac ctg	acc aat gca acg ttt	ccc act gga gag gtc	5403	
Asp Pro Glu Gly His Leu	Thr Asn Ala Thr Phe	Pro Thr Gly Glu Val		
1656	1661	1666	1671	
agc agc ttc cac agt gac	ctg gag aag ctg aca	aaa gtg gag cta gat	5451	
Ser Ser Phe His Ser Asp	Leu Glu Lys Leu Thr	Lys Val Glu Leu Asp		
1672	1677	1682	1687	
act tcc aac cgt gaa aat	gtc ctc atg tca acc	aac ttg acg gca act	5499	
Thr Ser Asn Arg Glu Asn	Val Leu Met Ser Thr	Asn Leu Thr Ala Thr		
1688	1693	1698	1703	
agt acc ata tat att tta	aaa caa gaa aat act	caa agt acc tat cgg	5547	
Ser Thr Ile Tyr Ile Leu	Lys Gln Glu Asn Thr	Gln Ser Thr Tyr Arg		
1704	1709	1714	1719	
gtg aat cca gat ggt tcc	ctg cgt gtc act ttt	gcc agc ggg atg gag	5595	
Val Asn Pro Asp Gly Ser	Leu Arg Val Thr Phe	Ala Ser Gly Met Glu		
1720	1725	1730	1735	
atc ggc ctc agc tca gag	ccc cac atc ctg gca	ggg gca gtc aac cct	5643	
Ile Gly Leu Ser Ser Glu	Pro His Ile Leu Ala	Gly Ala Val Asn Pro		
1736	1741	1746	1751	
acc ctg ggc aaa tgc aac	atc tca ttg ccc gga	gag cac aat gca aac	5691	
Thr Leu Gly Lys Cys Asn	Ile Ser Leu Pro Gly	Glu His Asn Ala Asn		
1752	1757	1762	1767	
ctc atc gag tgg cgg cag	agg aag gag caa aac	aaa ggc aat gtt tcg	5739	
Leu Ile Glu Trp Arg Gln	Arg Lys Glu Gln Asn	Lys Gly Asn Val Ser		
1768	1773	1778	1783	
gct ttt gaa agg agg ctg	agg gcc cac aac aga	aac cta ctc tcc ata	5787	
Ala Phe Glu Arg Arg Leu	Arg Ala His Asn Arg	Asn Leu Leu Ser Ile		
1784	1789	1794	1799	
gat ttt gat cat ata acc	cgc aca gga aag atc	tat gat gac cat cga	5835	
Asp Phe Asp His Ile Thr	Arg Thr Gly Lys Ile	Tyr Asp Asp His Arg		
1800	1805	1810	1815	
aaa ttc acc ctt cga att	ctt tat gac cag act	ggg cga ccc att ctg	5883	
Lys Phe Thr Leu Arg Ile	Leu Tyr Asp Gln Thr	Gly Arg Pro Ile Leu		
1816	1821	1826	1831	
tgg tct cct gta agc aga	tat aat gaa gtg aac	atc aca tat tca cct	5931	
Trp Ser Pro Val Ser Arg	Tyr Asn Glu Val Asn	Ile Thr Tyr Ser Pro		
1832	1837	1842	1847	
tcg gga ttg gtg acg ttt	att caa aga gga acg	tgg aat gaa aaa atg	5979	
Ser Gly Leu Val Thr Phe	Ile Gln Arg Gly Thr	Trp Asn Glu Lys Met		
1848	1853	1858	1863	
gaa tat gac cag agt ggg	aaa att att tca aga	act tgg gct gat ggg	6027	
Glu Tyr Asp Gln Ser Gly	Lys Ile Ile Ser Arg	Thr Trp Ala Asp Gly		
1864	1869	1874	1879	



aaa att tgg agc tat acc tac tta gaa aaa tct gtg atg ctt ctc cta	6075
Lys Ile Trp Ser Tyr Thr Tyr Leu Glu Lys Ser Val Met Leu Leu Leu	
1880 1885 1890 1895	
cac agc cag cgg cgt tac atc ttt gag tat gac caa tca gat tgc ctg	6123
His Ser Gln Arg Arg Tyr Ile Phe Glu Tyr Asp Gln Ser Asp Cys Leu	
1896 1901 1906 1911	
ctg tca gtt acc atg cct agc atg gtg cgc cac agc tta caa acc atg	6171
Leu Ser Val Thr Met Pro Ser Met Val Arg His Ser Leu Gln Thr Met	
1912 1917 1922 1927	
ctt tca gtg ggc tac tac cgt aat atc tac acc cca ccg gac agt agc	6219
Leu Ser Val Gly Tyr Tyr Arg Asn Ile Tyr Thr Pro Pro Asp Ser Ser	
1928 1933 1938 1943	
act tct ttt atc caa gac tat agt cga gat ggc cga ttg cta cag acc	6267
Thr Ser Phe Ile Gln Asp Tyr Ser Arg Asp Gly Arg Leu Leu Gln Thr	
1944 1949 1954 1959	
ctg cat ctg ggg aca ggg cgc aga gtc tta tac aag tac acc aag caa	6315
Leu His Leu Gly Thr Gly Arg Arg Val Leu Tyr Lys Tyr Thr Lys Gln	
1960 1965 1970 1975	
gca agg ctt tct gag gtt ctc tat gat acc act cag gtc aca tta aca	6363
Ala Arg Leu Ser Glu Val Leu Tyr Asp Thr Thr Gln Val Thr Leu Thr	
1976 1981 1986 1991	
tat gaa gag tct tct gga gtg att aag aca ata cac ctg atg cat gac	6411
Tyr Glu Glu Ser Ser Gly Val Ile Lys Thr Ile His Leu Met His Asp	
1992 1997 2002 2007	
gga ttc atc tgc aca atc aga tac agg caa aca gga cct ctt att gga	6459
Gly Phe Ile Cys Thr Ile Arg Tyr Arg Gln Thr Gly Pro Leu Ile Gly	
2008 2013 2018 2023	
cgc cag att ttc aga ttc agt gaa gaa ggc ctt gtg aat gca cgg ttc	6507
Arg Gln Ile Phe Arg Phe Ser Glu Glu Gly Leu Val Asn Ala Arg Phe	
2024 2029 2034 2039	
gac tac agc tac aac aat ttc cga gtc aca agc atg caa gct gta atc	6555
Asp Tyr Ser Tyr Asn Asn Phe Arg Val Thr Ser Met Gln Ala Val Ile	
2040 2045 2050 2055	
aat gaa acc cct ttg cct ata gat ctt tac cga tat gtt gat gtc tct	6603
Asn Glu Thr Pro Leu Pro Ile Asp Leu Tyr Arg Tyr Val Asp Val Ser	
2056 2061 2066 2071	
ggc aga aca gag cag ttt gga aaa ttc agt gta att aat tac gat tta	6651
Gly Arg Thr Glu Gln Phe Gly Lys Phe Ser Val Ile Asn Tyr Asp Leu	
2072 2077 2082 2087	
aat cag gtc ata act act aca gtg atg aaa cac acc aaa atc ttc agt	6699
Asn Gln Val Ile Thr Thr Thr Val Met Lys His Thr Lys Ile Phe Ser	
2088 2093 2098 2103	

gcc aat gga caa gtc att gaa gtc caa tat gaa atc cta aag gca att Ala Asn Gly Gln Val Ile Glu Val Gln Tyr Glu Ile Leu Lys Ala Ile 2104 2109 2114 2119	6747
gcc tac tgg atg acc att caa tat gat aat gtg ggc cga cat ggt aat Ala Tyr Trp Met Thr Ile Gln Tyr Asp Asn Val Gly Arg His Gly Asn 2120 2125 2130 2135	6795
atg tga cataagggtg ggagtagatg ccaatataac aagggtacttc tatgaatacg Met * 2136	6851
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gagttactca ttactcatcc tctagtctgt tttttttttt taacctttct ttgttgtttt	540
ggttttttta aaaaaacctt tccctctctc cttttgatca cttgttccct aacttgcac	600
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Met Gln Ser Arg Asp Thr Val Asn Val	
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aag ttt act ccc aga tcc ttc tgg ggc tgc cgt cct aaa cat act ggg	1179
Lys Phe Thr Pro Arg Ser Phe Trp Gly Ser Arg Pro Lys His Thr Gly	
10 15 20 25	
ggc aga tct gag atg agg gcc cac gtt ccc cag gcc cct tgg gca agg	1227
Gly Arg Ser Glu Met Arg Ala His Val Pro Gln Ala Pro Trp Ala Arg	
26 31 36 41	

caa gcg ccg cct gtt ctg ccc ctc tgg acc gtg gtg aat gac cat ccc	1275
Gln Ala Pro Pro Val Leu Pro Leu Trp Thr Val Val Asn Asp His Pro	
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cat gag aaa cct gtt tca aga ccc cag aat aca tag agac acacacatgg	1325
His Glu Lys Pro Val Ser Arg Pro Gln Asn Thr *	
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tctgtggcaa tataaaaata ttttggcctt tcaaggcaaa tacaaaagaa actaccatt	1445
aacatggctg agtgtctcag tcccaaacaa taaagaactt gaagagggtt agccggaaac	1505
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gaggtggtcc ttgaagacaa ggaggtggac ggatgatgtc atccctgagg agagaccgg	2825





Glu Thr Asn Pro Val	Pro Ser Arg Lys Ile Ala Tyr Lys Asn Ser Leu	
124	129	134 139
tgt gac tca tgt gaa aag tgt tta acg tct gtt tca gaa tat att agt		604
Cys Asp Ser Cys Glu Lys Cys Leu Thr Ser Val Ser Glu Tyr Ile Ser		
140	145 150	155
agt gat gga agc tat gca aga atg aaa gct gat gaa tgt agt gga tgt		652
Ser Asp Gly Ser Tyr Ala Arg Met Lys Ala Asp Glu Cys Ser Gly Cys		
156	161 166	171
ggg aaa tca ctc ctc cat att aag ctt gag aaa act cat cca gga gat		700
Gly Lys Ser Leu Leu His Ile Lys Leu Glu Lys Thr His Pro Gly Asp		
172	177 182	187
caa gct tat gaa ttt aat caa aat ggg gaa cct tat act cta aat gaa		748
Gln Ala Tyr Glu Phe Asn Gln Asn Gly Glu Pro Tyr Thr Leu Asn Glu		
188	193 198	203
gaa agt ctt tat cag aaa att cgt att ttg gag aaa cct ttt gaa tat		796
Glu Ser Leu Tyr Gln Lys Ile Arg Ile Leu Glu Lys Pro Phe Glu Tyr		
204	209 214	219
att gaa tgc cag aaa gcc ttc caa aag gac act gtt ttt gtt aat cac		844
Ile Glu Cys Gln Lys Ala Phe Gln Lys Asp Thr Val Phe Val Asn His		
220	225 230	235
atg gaa gaa aag ccc tat aag tgg aat gga tct gaa ata gcc ttt ctc		892
Met Glu Glu Lys Pro Tyr Lys Trp Asn Gly Ser Glu Ile Ala Phe Leu		
236	241 246	251
cag atg tgc gac ctc act gta cat cag aca tct cat atg gaa atg aag		940
Gln Met Ser Asp Leu Thr Val His Gln Thr Ser His Met Glu Met Lys		
252	257 262	267
ccc tat gaa tgc agt gaa tgt ggg aaa tcc ttc tgt aaa aag tca aaa		988
Pro Tyr Glu Cys Ser Glu Cys Gly Lys Ser Phe Cys Lys Lys Ser Lys		
268	273 278	283
ttt att ata cat cag agg act cac aca gga gag aaa cct tac gaa tgt		1036
Phe Ile Ile His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys		
284	289 294	299
aat cag tgt ggg aaa tcc ttc tgc cag aag gga acc ctt act gtg cat		1084
Asn Gln Cys Gly Lys Ser Phe Cys Gln Lys Gly Thr Leu Thr Val His		
300	305 310	315
cag aga aca cac aca ggg gag aag ccc tat gaa tgt aat gaa tgt ggg		1132
Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Asn Glu Cys Gly		
316	321 326	331
aag aac ttt tac cag aag tta cac ctc att cag cat cag aga act cac		1180
Lys Asn Phe Tyr Gln Lys Leu His Leu Ile Gln His Gln Arg Thr His		
332	337 342	347
tca gga gag aag ccc tat gaa tgt agt tat tgt gga aaa tcc ttt tgc		1228
Ser Gly Glu Lys Pro Tyr Glu Cys Ser Tyr Cys Gly Lys Ser Phe Cys		

348	353	358	363	
cag aag aca cac ctc	aca caa cat	cag aga aca cat	tca gga gag aga	1276
Gln Lys Thr His Leu	Thr Gln His Gln	Arg Thr His Ser	Gly Glu Arg	
364	369	374	379	
cct tat gtt tgt cat	gac tgt ggg aaa acc	ttc tcg cag aag tca	gca	1324
Pro Tyr Val Cys His	Asp Cys Gly Lys Thr	Phe Ser Gln Lys Ser	Ala	
380	385	390	395	
ctt aat gac cat cag	aaa att cac aca ggt	gtg aaa ctc tac aag	tgt	1372
Leu Asn Asp His Gln	Lys Ile His Thr Gly	Val Lys Leu Tyr Lys	Cys	
396	401	406	411	
agt gaa tgt ggg aaa	tgc ttc tgc cgc aag	tct act ctc acg acc	cac	1420
Ser Glu Cys Gly Lys	Cys Phe Cys Arg Lys	Ser Thr Leu Thr Thr	His	
412	417	422	427	
ctg agg acc cac aca	gga gag aaa ccg tat	gaa tgt aat gag tgt	gga	1468
Leu Arg Thr His Thr	Gly Glu Lys Pro Tyr	Glu Cys Asn Glu Cys	Gly	
428	433	438	443	
aaa gcc ttc tct cgg	atg tca tac ctc act	gta cat tat aga act	cat	1516
Lys Ala Phe Ser Arg	Met Ser Tyr Leu Thr	Val His Tyr Arg Thr	His	
444	449	454	459	
tca gga gag aaa ccc	tat gag tgt act gaa	tgt gga aaa aaa ttc	tac	1564
Ser Gly Glu Lys Pro	Tyr Glu Cys Thr Glu	Cys Gly Lys Lys Phe	Tyr	
460	465	470	475	
cac aaa tca gca ttc	aac agc cat cag aga	att cat agg aga ggc	aat	1612
His Lys Ser Ala Phe	Asn Ser His Gln Arg	Ile His Arg Arg Gly	Asn	
476	481	486	491	
atg aat gta ata gat	gtg gga agg ctt ctc	tga agtcagac ctcattttat		1663
Met Asn Val Ile Asp	Val Gly Arg Leu Leu	*		
492	497	502		
atcagagaac ccttttcagta tagtgaatca gaaactcctg cctgaagtca aacaccttgt				1723
acatcagaga gttcacacag gttagtgtgg acatcccctt gtgtgttgga ctcataatct				1783
gaagactcac agaatggaaa ccatgattat aacaagacca catggtataa caatactaga				1843
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ccgtcagccc agaagacgta aagcaggcta ccagcaattt tgagaacttg caaaaacagc	180
ttgcaaggaa a atg aag ctt cct att ttc ata gca gat gca ttc aca gca	230
Met Lys Leu Pro Ile Phe Ile Ala Asp Ala Phe Thr Ala	
1 5 10	
aga gca ttt cgt ggg aat cct gct gct gtt tgc ctc cta gaa aat gaa	278
Arg Ala Phe Arg Gly Asn Pro Ala Ala Val Cys Leu Leu Glu Asn Glu	
14 19 24 29	
ttg gat gaa gac atg cat cag aaa att gca agg gag atg aac ctc tct	326
Leu Asp Glu Asp Met His Gln Lys Ile Ala Arg Glu Met Asn Leu Ser	
30 35 40 45	
gaa act gct ttt atc cga aaa ctg cac ccg aca gac aac ttt gca caa	374
Glu Thr Ala Phe Ile Arg Lys Leu His Pro Thr Asp Asn Phe Ala Gln	
46 51 56 61	
agt tcc tgc ttt gga ctg aga tgg ttt aca cca gcg agt gag gtc cca	422
Ser Ser Cys Phe Gly Leu Arg Trp Phe Thr Pro Ala Ser Glu Val Pro	
62 67 72 77	
ctc tgt ggc cat gcc acc ctg gct tct gca gct gtg ctg ttt cac aaa	470
Leu Cys Gly His Ala Thr Leu Ala Ser Ala Ala Val Leu Phe His Lys	
78 83 88 93	
ata aaa aac atg aat agc acg ctc acg ttt gtc act ctg agt gga gaa	518
Ile Lys Asn Met Asn Ser Thr Leu Thr Phe Val Thr Leu Ser Gly Glu	
94 99 104 109	
cta agg gcc aga cga gca gag gac ggc atc gtc ctg gac ttg cct ctt	566
Leu Arg Ala Arg Arg Ala Glu Asp Gly Ile Val Leu Asp Leu Pro Leu	
110 115 120 125	
tat cca gcc cac ccc cag gac ttc cat gaa gta gag gac ttg ata aag	614
Tyr Pro Ala His Pro Gln Asp Phe His Glu Val Glu Asp Leu Ile Lys	
126 131 136 141	
act gcc ata ggc aac aca ctg gtc cag gac atc tgt tat tct cca gat	662
Thr Ala Ile Gly Asn Thr Leu Val Gln Asp Ile Cys Tyr Ser Pro Asp	
142 147 152 157	
acc caa aag ctc ctc gtc cgc ctc agt gac gtt tac aac agg tcg ttt	710
Thr Gln Lys Leu Leu Val Arg Leu Ser Asp Val Tyr Asn Arg Ser Phe	
158 163 168 173	

ctg gag aac ctg aaa gtg aac acg gag aat ctg ctg caa gtt gaa aac	758
Leu Glu Asn Leu Lys Val Asn Thr Glu Asn Leu Leu Gln Val Glu Asn	
174 179 184 189	

aca ggg aag gtg aaa ggg ctt att ctt acc ctt aaa gga gag cct ggt	806
Thr Gly Lys Val Lys Gly Leu Ile Leu Thr Leu Lys Gly Glu Pro Gly	
190 195 200 205	

ggg cag acc caa gca ttt gac ttt tac tca aga tat ttt gca cag tgg	854
Gly Gln Thr Gln Ala Phe Asp Phe Tyr Ser Arg Tyr Phe Ala Pro Trp	
206 211 216 221	

gtt ggt gtg gct gaa gac cca gtg aca ggg tct gca cac gct gtt ctc	902
Val Gly Val Ala Glu Asp Pro Val Thr Gly Ser Ala His Ala Val Leu	
222 227 232 237	

agc agc tac tgg tcc cag cat ctg ggg aag aaa gaa atg cat gct ttt	950
Ser Ser Tyr Trp Ser Gln His Leu Gly Lys Lys Glu Met His Ala Phe	
238 243 248 253	

cag tgt tcc cac cga gga gga gag ctg gga att tcc ctt cgt cca gac	998
Gln Cys Ser His Arg Gly Gly Glu Leu Gly Ile Ser Leu Arg Pro Asp	
254 259 264 269	

gga agg gtt gac att aga gga ggt gca gct gtt gtt tta gag ggc aca	1046
Gly Arg Val Asp Ile Arg Gly Gly Ala Ala Val Val Leu Glu Gly Thr	
270 275 280 285	

ctg aca gcc tag agg tggttatgct gtgacgctgc tgtctctaac caccaagtat	1101
Leu Thr Ala *	
286	

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gcactttgag aggccaaggt ggggtgatca cctgaggtca ggggttcgac accagcctgg	1281
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Met Asn  
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Met Phe Lys Glu Ala Val Thr Phe Lys Asp Val Ala Val Thr Phe Thr  
3 8 13 18

gag gag gaa ttg ggg ctg ctg ggc cct gcc cag agg aag ctg tac cga 273  
Glu Glu Glu Leu Gly Leu Leu Gly Pro Ala Gln Arg Lys Leu Tyr Arg  
19 24 29 34

gat gtg atg gtg gag aac ttt agg aac ctg ctg tca gtg ggg cat cca 321  
Asp Val Met Val Glu Asn Phe Arg Asn Leu Leu Ser Val Gly His Pro  
35 40 45 50

ccc ttc aaa caa gat gta tca cct ata gaa aga aat gag cag ctt tgg 369  
Pro Phe Lys Gln Asp Val Ser Pro Ile Glu Arg Asn Glu Gln Leu Trp  
51 56 61 66

ata atg acg aca gca acc cga aga cag gga aat tta gat acc tta ctt 417  
Ile Met Thr Thr Ala Thr Arg Arg Gln Gly Asn Leu Asp Thr Leu Leu  
67 72 77 82

gta aaa gct ctt ttg ctg tat gac ctg gct caa act taa acttgattt 466  
Val Lys Ala Leu Leu Leu Tyr Asp Leu Ala Gln Thr \*  
83 88 93

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ccagcagctg ctgttgccac caccactagt tcaagcacc atg cag ttt acc tca 174  
Met Gln Phe Thr Ser  
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ata tca aat tct ttg acc tcc act gct gct att ggg ctc tca ttt aca	222
Ile Ser Asn Ser Leu Thr Ser Thr Ala Ala Ile Gly Leu Ser Phe Thr	
6 11 16 21	
act tca acg act acc acc gcc act ttc acc acc aac act act acc aca	270
Thr Ser Thr Thr Thr Thr Ala Thr Phe Thr Thr Asn Thr Thr Thr Thr	
22 27 32 37	
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Ile Thr Ser Gly Phe Thr Val Asn Gln Asn Gln Leu Leu Ser Arg Gly	
38 43 48 53	
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Phe Glu Asn Leu Val Pro Tyr Thr Ser Thr Val Ser Val Val Ala Thr	
54 59 64 69	
cct gtg atg aca tat ggt cat ctg gag ggt ctt ata aat gag tgg aac	414
Pro Val Met Thr Tyr Gly His Leu Glu Gly Leu Ile Asn Glu Trp Asn	
70 75 80 85	
ctt gag ctg gaa gat caa gag aag tac ttt ctt ctc cag gcc act cag	462
Leu Glu Leu Glu Asp Gln Glu Lys Tyr Phe Leu Leu Gln Ala Thr Gln	
86 91 96 101	
gtc aat gct tgg gac cat aca ttg att gag aat ggt gag atg att cgt	510
Val Asn Ala Trp Asp His Thr Leu Ile Glu Asn Gly Glu Met Ile Arg	
102 107 112 117	
att tta cat gga gaa gtg aac aaa gtg aaa ctg gat cag aaa aga ttg	558
Ile Leu His Gly Glu Val Asn Lys Val Lys Leu Asp Gln Lys Arg Leu	
118 123 128 133	
gaa caa gaa ttg gat ttt atc ctg tca cag cag cag gaa cta gaa ttt	606
Glu Gln Glu Leu Asp Phe Ile Leu Ser Gln Gln Gln Glu Leu Glu Phe	
134 139 144 149	
ctg ttg act tat tta gag gag tct acg cgc gac cag agt gga ctt cat	654
Leu Leu Thr Tyr Leu Glu Glu Ser Thr Arg Asp Gln Ser Gly Leu His	
150 155 160 165	
tat ctg cag gat gca gat gag gag cat gtg gag atc tcc acc aga tct	702
Tyr Leu Gln Asp Ala Asp Glu Glu His Val Glu Ile Ser Thr Arg Ser	
166 171 176 181	
gca gaa ttc tga atg cccatatgga ctccctgcag tggattgatc ggaattcagg	757
Ala Glu Phe *	
182	
catgctgcga aggaaggtag aagtggtaac acgggttttt cgaggattat cattcagcag	817
gggtcttttca catcatgttc atcaactgttt tttagtgtat tgaccctttt ttcagcttgt	877
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 <212> DNA  
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 atgatcaaaa taaatacatc tgggtttaac ctgaatcacc atttagtaac atagtcatca 180  
 gtttcagtac ctttgtcttt ttccaggtaa aactcttttag cctcttatca aacatgttat 240  
 gccacatcta aattccatat tttatgtaat ataaggaaaa atagttttat ttgtatgatt 300  
 tatacttcat gtgttaggaa cctgtgacta catgttctga actgttagta agaaaaatgg 360  
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 tctgatttgc attttatttt cttttgtatt ttaaggat atg gaa tat tat ctt 473  
 Met Glu Tyr Tyr Leu  
 1  
 gta aaa tgg aaa gga tgg cca gat tct aca aat act tgg gaa cct ttg 521  
 Val Lys Trp Lys Gly Trp Pro Asp Ser Thr Asn Thr Trp Glu Pro Leu  
 6 11 16 21  
 caa aat ctg aag tgc ccg tta ctg ctt cag caa ttc tct aat gac aag 569  
 Gln Asn Leu Lys Cys Pro Leu Leu Leu Gln Gln Phe Ser Asn Asp Lys  
 22 27 32 37  
 cat aat tat tta tct cag gta aag aaa ggc aaa gca ata act cca aaa 617  
 His Asn Tyr Leu Ser Gln Val Lys Lys Gly Lys Ala Ile Thr Pro Lys  
 38 43 48 53  
 gac aat aac aaa act ttg aaa cct gcc att gct gag tac att gtg aag 665  
 Asp Asn Asn Lys Thr Leu Lys Pro Ala Ile Ala Glu Tyr Ile Val Lys  
 54 59 64 69  
 aag gct aaa caa agg ata gct ctg cag aga tgg caa gat gaa ctc aac 713  
 Lys Ala Lys Gln Arg Ile Ala Leu Gln Arg Trp Gln Asp Glu Leu Asn  
 70 75 80 85  
 aga aga aag aat cat aaa gga atg ata ttt gtt gaa aat act gtt gat 761  
 Arg Arg Lys Asn His Lys Gly Met Ile Phe Val Glu Asn Thr Val Asp  
 86 91 96 101  
 tta gag ggc cca cct tca gac ttc tat tac att aac gaa tac aaa cca 809  
 Leu Glu Gly Pro Pro Ser Asp Phe Tyr Tyr Ile Asn Glu Tyr Lys Pro  
 102 107 112 117

gct cct gga atc agc tta gtc aat gaa gct acc ttt ggt tgt tca tgc	857
Ala Pro Gly Ile Ser Leu Val Asn Glu Ala Thr Phe Gly Cys Ser Cys	
118 123 128 133	
aca gat tgc ttc ttt caa aaa tgt tgt cct gct gaa gct gga gtt ctt	905
Thr Asp Cys Phe Phe Gln Lys Cys Cys Pro Ala Glu Ala Gly Val Leu	
134 139 144 149	
ttg gct tat aat aaa aac caa caa att aaa atc cca cct ggt act ccc	953
Leu Ala Tyr Asn Lys Asn Gln Gln Ile Lys Ile Pro Pro Gly Thr Pro	
150 155 160 165	
atc tat gaa tgc aac tca agg tgt cag tgt ggt cct gat tgt ccc aat	1001
Ile Tyr Glu Cys Asn Ser Arg Cys Gln Cys Gly Pro Asp Cys Pro Asn	
166 171 176 181	
agg att gta caa aaa ggc aca cag tat tgc ctt tgc atc ttt cga act	1049
Arg Ile Val Gln Lys Gly Thr Gln Tyr Ser Leu Cys Ile Phe Arg Thr	
182 187 192 197	
agc aat gga cgt ggc tgg ggt gta aag acc ctt gtg aag att aaa aga	1097
Ser Asn Gly Arg Gly Trp Gly Val Lys Thr Leu Val Lys Ile Lys Arg	
198 203 208 213	
atg agt ttt gtc atg gaa tat gtt gga gag gta atc aca agt gaa gaa	1145
Met Ser Phe Val Met Glu Tyr Val Gly Glu Val Ile Thr Ser Glu Glu	
214 219 224 229	
gct gaa aga cga gga cag ttc tat gac aac aag gga atc acg tat ctc	1193
Ala Glu Arg Arg Gly Gln Phe Tyr Asp Asn Lys Gly Ile Thr Tyr Leu	
230 235 240 245	
ttt gat ctg gac tat gag tct gat gaa ttc aca gtg gat gcg gct cga	1241
Phe Asp Leu Asp Tyr Glu Ser Asp Glu Phe Thr Val Asp Ala Ala Arg	
246 251 256 261	
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Tyr Gly Asn Val Ser His Phe Val Asn His Ser Cys Asp Pro Asn Leu	
262 267 272 277	
cag gtg ttc aat gtt ttc att gat aac ctc gat act cgt ctt ccc cga	1337
Gln Val Phe Asn Val Phe Ile Asp Asn Leu Asp Thr Arg Leu Pro Arg	
278 283 288 293	
ata gca ttg ttt tcc aca aga acc ata aat gct gga gaa gag ctg act	1385
Ile Ala Leu Phe Ser Thr Arg Thr Ile Asn Ala Gly Glu Glu Leu Thr	
294 299 304 309	
ttt gat tat caa atg aaa ggt tct gga gat ata tct tca gat tct att	1433
Phe Asp Tyr Gln Met Lys Gly Ser Gly Asp Ile Ser Ser Asp Ser Ile	
310 315 320 325	
gac cac agc cca gcc aaa aag agg gtc aga aca gta tgt aaa tgt gga	1481
Asp His Ser Pro Ala Lys Lys Arg Val Arg Thr Val Cys Lys Cys Gly	
326 331 336 341	
gct gtg act tgc aga ggt tac ctc aac tga a ctttttcagg aaatagagct	1532



Ala Val Thr Cys Arg Gly Tyr Leu Asn \*  
342 347

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Met  
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gcg cca gcg aaa gcc acg aac gtg gtg cgg ctg cta cta ggc tcc aca 166  
Ala Pro Ala Lys Ala Thr Asn Val Val Arg Leu Leu Leu Gly Ser Thr  
2 7 12 17

gcg ctg tgg ctt tcg cag ctc ggc tcc ggg acg gtc gcc gcg tcc aag 214  
Ala Leu Trp Leu Ser Gln Leu Gly Ser Gly Thr Val Ala Ala Ser Lys  
18 23 28 33

tcg gtg act gcc cac ttg gcc gcg aag tgg ccc gag acc ccg ctg ctg 262  
Ser Val Thr Ala His Leu Ala Lys Trp Pro Glu Thr Pro Leu Leu  
34 39 44 49

ctg gag gca agt gaa ttt atg gca gaa gaa agt aat gaa aaa ttt tgg 310  
Leu Glu Ala Ser Glu Phe Met Ala Glu Glu Ser Asn Glu Lys Phe Trp  
50 55 60 65

cag ttt ttg gaa act gtg caa gaa tta gca att tat aag caa aca gaa 358  
Gln Phe Leu Glu Thr Val Gln Glu Leu Ala Ile Tyr Lys Gln Thr Glu  
66 71 76 81

tca gat tat tct tat tac aac tta atc ctg aag aaa gct gga cag ttt 406  
Ser Asp Tyr Ser Tyr Tyr Asn Leu Ile Leu Lys Lys Ala Gly Gln Phe  
82 87 92 97

cta gac aat tta cac atc aac ctt tta aag ttt gct ttc tct ata agg 454  
Leu Asp Asn Leu His Ile Asn Leu Leu Lys Phe Ala Phe Ser Ile Arg  
98 103 108 113

gca tac tcc cca gct att cag atg ttt cag cag att gca gct gat gag 502  
Ala Tyr Ser Pro Ala Ile Gln Met Phe Gln Gln Ile Ala Ala Asp Glu  
114 119 124 129

cca cca cca gat ggt tgt aat gca ttt gtg gtt att cat aag aag cac	550
Pro Pro Pro Asp Gly Cys Asn Ala Phe Val Val Ile His Lys Lys His	
130 135 140 145	
acc tgt aaa att aat gag att aaa aag ctg ctg aag aaa gct gct tca	598
Thr Cys Lys Ile Asn Glu Ile Lys Lys Leu Leu Lys Lys Ala Ala Ser	
146 151 156 161	
agg act aga cct tat cta ttt aaa gga gat cac aaa ttt cct aca aac	646
Arg Thr Arg Pro Tyr Leu Phe Lys Gly Asp His Lys Phe Pro Thr Asn	
162 167 172 177	
aaa gag aac tta cca gtg gtg att ctc tat gcc gaa atg ggt act aga	694
Lys Glu Asn Leu Pro Val Val Ile Leu Tyr Ala Glu Met Gly Thr Arg	
178 183 188 193	
aca ttt agt gca ttt cac aaa gta ttg tct gaa aaa gct caa aat gag	742
Thr Phe Ser Ala Phe His Lys Val Leu Ser Glu Lys Ala Gln Asn Glu	
194 199 204 209	
gaa att ctg tat gtt ctt cgc cat tat att cag aaa cca agc tca cgg	790
Glu Ile Leu Tyr Val Leu Arg His Tyr Ile Gln Lys Pro Ser Ser Arg	
210 215 220 225	
aaa atg tac tta tct ggg tat ggt gtg gag cta gca att aag agt aca	838
Lys Met Tyr Leu Ser Gly Tyr Gly Val Glu Leu Ala Ile Lys Ser Thr	
226 231 236 241	
gaa tac aaa gca ctg gat gat acc caa gtt aaa act gtg act aat act	886
Glu Tyr Lys Ala Leu Asp Asp Thr Gln Val Lys Thr Val Thr Asn Thr	
242 247 252 257	
act gta gag gat gag act gaa aca aat gaa gtt caa gga ttt ctc ttt	934
Thr Val Glu Asp Glu Thr Glu Thr Asn Glu Val Gln Gly Phe Leu Phe	
258 263 268 273	
ggg aaa cta aaa gaa ata tat tca gat ctt aga gat aat ctg aca gca	982
Gly Lys Leu Lys Glu Ile Tyr Ser Asp Leu Arg Asp Asn Leu Thr Ala	
274 279 284 289	
ttc caa aaa tac ctg att gag agt aac aaa caa atg atg cct ttg aaa	1030
Phe Gln Lys Tyr Leu Ile Glu Ser Asn Lys Gln Met Met Pro Leu Lys	
290 295 300 305	
gtc tgg gaa cta caa gat ctt agt ttt caa gca gct tct caa ata atg	1078
Val Trp Glu Leu Gln Asp Leu Ser Phe Gln Ala Ala Ser Gln Ile Met	
306 311 316 321	
tcc gct cca gtt tat gat gcc att aaa tta atg aaa gac att tca cag	1126
Ser Ala Pro Val Tyr Asp Ala Ile Lys Leu Met Lys Asp Ile Ser Gln	
322 327 332 337	
aac ttc ccc ata aaa gcc aga tct cta acc aga att gct gta aat caa	1174
Asn Phe Pro Ile Lys Ala Arg Ser Leu Thr Arg Ile Ala Val Asn Gln	
338 343 348 353	

cat atg aga gaa gaa ata aag gaa aat caa aag gat ctt caa gtt aga	1222
His Met Arg Glu Glu Ile Lys Glu Asn Gln Lys Asp Leu Gln Val Arg	
354 359 364 369	
ttt aaa att cag cca ggc gat gct cgt cta ttt ata aat ggc ctt cgt	1270
Phe Lys Ile Gln Pro Gly Asp Ala Arg Leu Phe Ile Asn Gly Leu Arg	
370 375 380 385	
gtt gat atg gat gtt tat gac gct ttt agt att ttg gat atg ctg aaa	1318
Val Asp Met Asp Val Tyr Asp Ala Phe Ser Ile Leu Asp Met Leu Lys	
386 391 396 401	
tta gaa gga aaa atg atg aat ggc ctt cgc aat ctt ggg atc aat ggg	1366
Leu Glu Gly Lys Met Met Asn Gly Leu Arg Asn Leu Gly Ile Asn Gly	
402 407 412 417	
gaa gat atg agc aaa ttt tta aaa tta aat tca cac att tgg gaa tat	1414
Glu Asp Met Ser Lys Phe Leu Lys Leu Asn Ser His Ile Trp Glu Tyr	
418 423 428 433	
act tat gta tta gat att cga cat tct tct ata atg tgg att aat gac	1462
Thr Tyr Val Leu Asp Ile Arg His Ser Ser Ile Met Trp Ile Asn Asp	
434 439 444 449	
tta gaa aat gat gat ttg tat att aca tgg cct aca agt tgc cag aaa	1510
Leu Glu Asn Asp Asp Leu Tyr Ile Thr Trp Pro Thr Ser Cys Gln Lys	
450 455 460 465	
ctt ctg aag cca gta ttt cct gga agt gta cct tcc ata agg cgc aat	1558
Leu Leu Lys Pro Val Phe Pro Gly Ser Val Pro Ser Ile Arg Arg Asn	
466 471 476 481	
ttt cat aat ttg gtt ctg ttt att gat ccg gcc caa gaa tat acc ttg	1606
Phe His Asn Leu Val Leu Phe Ile Asp Pro Ala Gln Glu Tyr Thr Leu	
482 487 492 497	
gat ttt ata aaa ctt gct gat gtt ttc tat tct cac gaa gtt cct ctt	1654
Asp Phe Ile Lys Leu Ala Asp Val Phe Tyr Ser His Glu Val Pro Leu	
498 503 508 513	
aga att ggt ttt gtg ttc att ctt aat aca gat gat gaa gtt gat gga	1702
Arg Ile Gly Phe Val Phe Ile Leu Asn Thr Asp Asp Glu Val Asp Gly	
514 519 524 529	
gca aat gat gct gga gtt gct ctc tgg cga gct ttc aac tat att gca	1750
Ala Asn Asp Ala Gly Val Ala Leu Trp Arg Ala Phe Asn Tyr Ile Ala	
530 535 540 545	
gaa gaa ttt gat ata tca gaa gca ttt att tct ata gta cac atg tac	1798
Glu Glu Phe Asp Ile Ser Glu Ala Phe Ile Ser Ile Val His Met Tyr	
546 551 556 561	
caa aaa gtg aag aag gat caa aat ata ctc act gtg gac aat gtg aag	1846
Gln Lys Val Lys Lys Asp Gln Asn Ile Leu Thr Val Asp Asn Val Lys	
562 567 572 577	
agt gtt ctc caa aat aca ttt cct cat gct aat att tgg gat att ttg	1894

Ser Val Leu Gln Asn Thr Phe Pro His Ala Asn Ile Trp Asp Ile Leu	
578 583 588 593	
gga att cat tct aaa tat gat gaa gaa aga aag gct gga gca agc ttt	1942
Gly Ile His Ser Lys Tyr Asp Glu Glu Arg Lys Ala Gly Ala Ser Phe	
594 599 604 609	
tat aag atg act ggc ctg ggt cct ttg cct caa gct ctt tat aat ggt	1990
Tyr Lys Met Thr Gly Leu Gly Pro Leu Pro Gln Ala Leu Tyr Asn Gly	
610 615 620 625	
gaa ccc ttt aaa cat gaa gag atg aat att aaa gaa cta aaa atg gct	2038
Glu Pro Phe Lys His Glu Glu Met Asn Ile Lys Glu Leu Lys Met Ala	
626 631 636 641	
gtt ctt caa aga atg atg gat gca tct gta tat tta caa aga gaa gtt	2086
Val Leu Gln Arg Met Met Asp Ala Ser Val Tyr Leu Gln Arg Glu Val	
642 647 652 657	
ttt ttg ggc aca tta aat gat cgc acg aat gca att gat ttt cta atg	2134
Phe Leu Gly Thr Leu Asn Asp Arg Thr Asn Ala Ile Asp Phe Leu Met	
658 663 668 673	
gat agg aat aat gtt gta ccc cgt ata aat act ttg att ttg cgt act	2182
Asp Arg Asn Asn Val Val Pro Arg Ile Asn Thr Leu Ile Leu Arg Thr	
674 679 684 689	
aac cag cag tac ctc aat tta ata tct aca tca gta act gct gat gtt	2230
Asn Gln Gln Tyr Leu Asn Leu Ile Ser Thr Ser Val Thr Ala Asp Val	
690 695 700 705	
gaa gat ttc tct act ttc ttt ttc ttg gat tca caa gat aag agt gct	2278
Glu Asp Phe Ser Thr Phe Phe Phe Leu Asp Ser Gln Asp Lys Ser Ala	
706 711 716 721	
gta att gca aag aac atg tat tat tta acc caa gac gat gag agt ata	2326
Val Ile Ala Lys Asn Met Tyr Tyr Leu Thr Gln Asp Asp Glu Ser Ile	
722 727 732 737	
att tct gca gtc act ctc tgg att att gca gat ttt gat aag cct tct	2374
Ile Ser Ala Val Thr Leu Trp Ile Ile Ala Asp Phe Asp Lys Pro Ser	
738 743 748 753	
ggg aga aaa ctt ctt ttt aat gca tta aag cac atg aaa aca agt gtt	2422
Gly Arg Lys Leu Leu Phe Asn Ala Leu Lys His Met Lys Thr Ser Val	
754 759 764 769	
cat agt cgg ttg ggg att att tat aat cct aca tca aaa ata aat gaa	2470
His Ser Arg Leu Gly Ile Ile Tyr Asn Pro Thr Ser Lys Ile Asn Glu	
770 775 780 785	
gag aac aca gct att tct aga gga att ttg gca gct ttt ctt aca cag	2518
Glu Asn Thr Ala Ile Ser Arg Gly Ile Leu Ala Ala Phe Leu Thr Gln	
786 791 796 801	
aag aac atg ttt ttg aga agc ttt ctt ggg caa ctg gca aag gaa gaa	2566
Lys Asn Met Phe Leu Arg Ser Phe Leu Gly Gln Leu Ala Lys Glu Glu	

802	807	812	817	
att gct aca gct att tac tct gga gat aaa att aaa aca ttc ctt att	2614			
Ile Ala Thr Ala Ile Tyr Ser Gly Asp Lys Ile Lys Thr Phe Leu Ile				
818	823	828	833	
gag ggg atg gat aag aat gct ttt gag aaa aaa tat aat act gtt gga	2662			
Glu Gly Met Asp Lys Asn Ala Phe Glu Lys Lys Tyr Asn Thr Val Gly				
834	839	844	849	
gtg aat att ttt cga act cac cag ttg ttc tgt caa gat gta ctt aaa	2710			
Val Asn Ile Phe Arg Thr His Gln Leu Phe Cys Gln Asp Val Leu Lys				
850	855	860	865	
tta cgt cct gga gaa atg ggt att gtc agc aat ggg aga ttc tta gga	2758			
Leu Arg Pro Gly Glu Met Gly Ile Val Ser Asn Gly Arg Phe Leu Gly				
866	871	876	881	
cct tta gat gaa gat ttt tat gca gaa gat ttt tac ttg ttg gaa aag	2806			
Pro Leu Asp Glu Asp Phe Tyr Ala Glu Asp Phe Tyr Leu Leu Glu Lys				
882	887	892	897	
ata aca ttt agt aat tta gga gag aaa att aaa ggc att gtt gaa aat	2854			
Ile Thr Phe Ser Asn Leu Gly Glu Lys Ile Lys Gly Ile Val Glu Asn				
898	903	908	913	
atg gga atc aac gca aat aac atg agt gac ttt att atg aaa gtt gat	2902			
Met Gly Ile Asn Ala Asn Asn Met Ser Asp Phe Ile Met Lys Val Asp				
914	919	924	929	
gcc ctt atg tcc tct gtg cct aag cgt gca tct cga tat gat gtc aca	2950			
Ala Leu Met Ser Ser Val Pro Lys Arg Ala Ser Arg Tyr Asp Val Thr				
930	935	940	945	
ttt ctt agg gag aat cac agt gtt ata aag acg aat cct caa gag aat	2998			
Phe Leu Arg Glu Asn His Ser Val Ile Lys Thr Asn Pro Gln Glu Asn				
946	951	956	961	
gat atg ttc ttc aat gtc att gct att gtt gat cca tta aca aga gaa	3046			
Asp Met Phe Phe Asn Val Ile Ala Ile Val Asp Pro Leu Thr Arg Glu				
962	967	972	977	
gca cag aaa atg gca cag ttg ttg gtt gta ctt ggc aag att atc aac	3094			
Ala Gln Lys Met Ala Gln Leu Leu Val Val Leu Gly Lys Ile Ile Asn				
978	983	988	993	
atg aag ata aag ttg ttc atg aac tgt agg ggc agg ctt tca gaa gcc	3142			
Met Lys Ile Lys Leu Phe Met Asn Cys Arg Gly Arg Leu Ser Glu Ala				
994	999	1004	1009	
cct tta gaa agc ttt tac cgt ttt gtt ctg gaa cca gaa ctg atg tca	3190			
Pro Leu Glu Ser Phe Tyr Arg Phe Val Leu Glu Pro Glu Leu Met Ser				
1010	1015	1020	1025	
ggg gct aat gac gtt tct tct ctt gga cca gtg gca aaa ttt ttg gat	3238			
Gly Ala Asn Asp Val Ser Ser Leu Gly Pro Val Ala Lys Phe Leu Asp				
1026	1031	1036	1041	

att cct gaa tca ccc ctc cta atc ctc aac atg att act cca gaa ggc	3286
Ile Pro Glu Ser Pro Leu Leu Ile Leu Asn Met Ile Thr Pro Glu Gly	
1042 1047 1052 1057	
tgg ttg gtt gaa aca gtg cac agc aac tgt gac ctt gat aat att cac	3334
Trp Leu Val Glu Thr Val His Ser Asn Cys Asp Leu Asp Asn Ile His	
1058 1063 1068 1073	
tta aag gat act gag aaa act gtt aca gca gaa tat gaa cta gaa tac	3382
Leu Lys Asp Thr Glu Lys Thr Val Thr Ala Glu Tyr Glu Leu Glu Tyr	
1074 1079 1084 1089	
tta cta ctg gaa gga caa tgc ttt gat aaa gtg aca gaa cag cct cct	3430
Leu Leu Leu Glu Gly Gln Cys Phe Asp Lys Val Thr Glu Gln Pro Pro	
1090 1095 1100 1105	
cgg ggt ctg cag ttc aca cta ggc aca aaa aat aaa cct gct gtg gtt	3478
Arg Gly Leu Gln Phe Thr Leu Gly Thr Lys Asn Lys Pro Ala Val Val	
1106 1111 1116 1121	
gat aca ata gtg atg gca cat cat ggg tat ttt caa tta aaa gca aac	3526
Asp Thr Ile Val Met Ala His His Gly Tyr Phe Gln Leu Lys Ala Asn	
1122 1127 1132 1137	
cca ggt gct tgg ata ctg agg tta cac caa gga aaa tct gaa gat att	3574
Pro Gly Ala Trp Ile Leu Arg Leu His Gln Gly Lys Ser Glu Asp Ile	
1138 1143 1148 1153	
tat caa ata gtt ggg cat gaa gga act gac tct caa gca gac cta gaa	3622
Tyr Gln Ile Val Gly His Glu Gly Thr Asp Ser Gln Ala Asp Leu Glu	
1154 1159 1164 1169	
gat atc att gtt gta tta aac agc ttc aaa agc aag ata ctc aaa gta	3670
Asp Ile Ile Val Val Leu Asn Ser Phe Lys Ser Lys Ile Leu Lys Val	
1170 1175 1180 1185	
aaa gtg aaa aaa gaa aca gac aaa att aag gaa gat atc ctt acc gat	3718
Lys Val Lys Lys Glu Thr Asp Lys Ile Lys Glu Asp Ile Leu Thr Asp	
1186 1191 1196 1201	
gaa gat gaa aaa aca aaa gga ctg tgg gat tcc att aaa agt ttc aca	3766
Glu Asp Glu Lys Thr Lys Gly Leu Trp Asp Ser Ile Lys Ser Phe Thr	
1202 1207 1212 1217	
gta agc ttg cat aaa gaa aac aaa aag gaa aaa gat gtc cta aac att	3814
Val Ser Leu His Lys Glu Asn Lys Lys Glu Lys Asp Val Leu Asn Ile	
1218 1223 1228 1233	
ttt tca gtt gct tct ggt cat tta tat gaa cgt ttt tta aga att atg	3862
Phe Ser Val Ala Ser Gly His Leu Tyr Glu Arg Phe Leu Arg Ile Met	
1234 1239 1244 1249	
atg ctt tct gtt ttg cgt aac acc aaa aca cca gtg aaa ttc tgg ttg	3910
Met Leu Ser Val Leu Arg Asn Thr Lys Thr Pro Val Lys Phe Trp Leu	
1250 1255 1260 1265	

cta aaa aat tat ctc tca ccg aca ttt aaa gaa gta att cct cac atg	3958
Leu Lys Asn Tyr Leu Ser Pro Thr Phe Lys Glu Val Ile Pro His Met	
1266 1271 1276 1281	
gct aaa gag tat gga ttc cga tat gaa cta gtt caa tat agg tgg ccc	4006
Ala Lys Glu Tyr Gly Phe Arg Tyr Glu Leu Val Gln Tyr Arg Trp Pro	
1282 1287 1292 1297	
cgt tgg ctt cgt caa cag act gaa aga cag agg att att tgg ggt tac	4054
Arg Trp Leu Arg Gln Gln Thr Glu Arg Gln Arg Ile Ile Trp Gly Tyr	
1298 1303 1308 1313	
aaa att ctt ttc ctt gat gtt ctt ttc cca cta gca gtg gac aaa atc	4102
Lys Ile Leu Phe Leu Asp Val Leu Phe Pro Leu Ala Val Asp Lys Ile	
1314 1319 1324 1329	
att ttt gtt gat gct gac cag att gtg aga cat gat cta aaa gaa ctt	4150
Ile Phe Val Asp Ala Asp Gln Ile Val Arg His Asp Leu Lys Glu Leu	
1330 1335 1340 1345	
cga gat ttc gat ctg gat gga gct cct tat ggg tat act cca ttt tgt	4198
Arg Asp Phe Asp Leu Asp Gly Ala Pro Tyr Gly Tyr Thr Pro Phe Cys	
1346 1351 1356 1361	
gat agc cgc agg gaa atg gat gga tat cgt ttc tgg aaa aca gga tac	4246
Asp Ser Arg Arg Glu Met Asp Gly Tyr Arg Phe Trp Lys Thr Gly Tyr	
1362 1367 1372 1377	
tgg gca tca cat ctt tta aga cgg aaa tac cat atc agt gct tta tat	4294
Trp Ala Ser His Leu Leu Arg Arg Lys Tyr His Ile Ser Ala Leu Tyr	
1378 1383 1388 1393	
gta gtg gat ctc aag aag ttc agg aga att gga gca ggt gac agg ctc	4342
Val Val Asp Leu Lys Lys Phe Arg Arg Ile Gly Ala Gly Asp Arg Leu	
1394 1399 1404 1409	
agg agc cag tat caa gct ctc agt caa gat cca aac agt ctt tca aac	4390
Arg Ser Gln Tyr Gln Ala Leu Ser Gln Asp Pro Asn Ser Leu Ser Asn	
1410 1415 1420 1425	
cta gat cag gat ctc ccc aat aat atg att tac caa gtc gcc att aag	4438
Leu Asp Gln Asp Leu Pro Asn Asn Met Ile Tyr Gln Val Ala Ile Lys	
1426 1431 1436 1441	
tct ctt cct caa gac tgg ctg tgg tgt gaa acc tgg tgt gat gat gaa	4486
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Leu Asp Gln Asp Leu Pro Asn Asn Met Ile Tyr Gln Val Ala Ile Lys	
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Lys Glu Ser Lys Leu Lys Ala Ala Ala Arg Ile Val Pro Glu Trp Val	
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Ala Asp Arg Leu Ser Pro Phe Leu Ala Ala Arg His Phe Asn Leu Pro	
476 481 486 491	
tcc aag acc gag tcc atg ttc atg gcg ggg ggc agc gac tgc ctc atc	1720
Ser Lys Thr Glu Ser Met Phe Met Ala Gly Gly Ser Asp Cys Leu Ile	
492 497 502 507	
gtc ggg gga gga ggc ggc cag gcg ctc tac atc gat ggg gac ctg aac	1768
Val Gly Gly Gly Gly Gly Gln Ala Leu Tyr Ile Asp Gly Asp Leu Asn	
508 513 518 523	
cgg ggc cgc aca agc cac tgc gac acc ttc aac aac cag ccc ctc tgc	1816
Arg Gly Arg Thr Ser His Cys Asp Thr Phe Asn Asn Gln Pro Leu Cys	
524 529 534 539	
tcc gag aac ttc ctc att gct gcc gtg aag gcc tgg ggc ttc cag gac	1864
Ser Glu Asn Phe Leu Ile Ala Ala Val Lys Ala Trp Gly Phe Gln Asp	
540 545 550 555	
cct gac acc cag tga cggcctgtgc cacggtgact gagccgtggt ggggcggtgg	1919
Pro Asp Thr Gln *	
556	
gccgaaaatg gaaatnccgc ctccgggcagc agagagcaga tgtattgcgt gcgctctaga	1979
cgaaacaagg agtgttcgt	1998

<210> 35  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (82)..(1515)

<400> 35	
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gttcgcggcc ggagcgcgga g atg ccg ggc agc gac acg gcg ctc acc gtg	111
Met Pro Gly Ser Asp Thr Ala Leu Thr Val	
1 5	
gac cgg acc tac tcg gac ccc ggc cgg cac cac cgc tgc aag agc cgg	159
Asp Arg Thr Tyr Ser Asp Pro Gly Arg His His Arg Cys Lys Ser Arg	
11 16 21 26	
gta gaa cgt cat gac atg aat acc tta agc ctg ccc ctg aac ata cgc	207



251	256	261	266	
agt aac gga aac cag tct ttt ggg gct ggt gga gcc agc aca ctg gac				927
Ser Asn Gly Asn Gln Ser Phe Gly Ala Gly Gly Ala Ser Thr Leu Asp				
267	272	277	282	
agc cag ggc aag ctg gcc gtg atc ctg gag gaa ctg agg gag atc aag				975
Ser Gln Gly Lys Leu Ala Val Ile Leu Glu Glu Leu Arg Glu Ile Lys				
283	288	293	298	
gat acc caa gct cag ctg gct gag gac atc gag gca ctg aag gtg cag				1023
Asp Thr Gln Ala Gln Leu Ala Glu Asp Ile Glu Ala Leu Lys Val Gln				
299	304	309	314	
ttt aag aga gaa tat ggt ttt att tct cag acc ctg caa gag gaa aga				1071
Phe Lys Arg Glu Tyr Gly Phe Ile Ser Gln Thr Leu Gln Glu Glu Arg				
315	320	325	330	
tac agg tat gag cga ctg gag gac cag ctg cat gac ctg acg gac ctg				1119
Tyr Arg Tyr Glu Arg Leu Glu Asp Gln Leu His Asp Leu Thr Asp Leu				
331	336	341	346	
cat cag cat gag aca gcc aac ctg aag cag gag ctg gcc agc att gag				1167
His Gln His Glu Thr Ala Asn Leu Lys Gln Glu Leu Ala Ser Ile Glu				
347	352	357	362	
gag aag gtg gcc tac cag gcc tac gag cgc tct cgg gac atc cag gaa				1215
Glu Lys Val Ala Tyr Gln Ala Tyr Glu Arg Ser Arg Asp Ile Gln Glu				
363	368	373	378	
gcc ttg gaa tcc tgc cag act cgc att tct aag ctg gag ctg cac cag				1263
Ala Leu Glu Ser Cys Gln Thr Arg Ile Ser Lys Leu Glu Leu His Gln				
379	384	389	394	
caa gag cag caa gct ctg cag aca gac acc gtg aat gct aaa gtt ctg				1311
Gln Glu Gln Gln Ala Leu Gln Thr Asp Thr Val Asn Ala Lys Val Leu				
395	400	405	410	
ctg ggg agg tgc atc aac gtg atc ctg gcc ttc atg act gtc atc tta				1359
Leu Gly Arg Cys Ile Asn Val Ile Leu Ala Phe Met Thr Val Ile Leu				
411	416	421	426	
gtg tgt gtg tcc acc atc gcg aag ttc gtc tca ccc atg atg aag agt				1407
Val Cys Val Ser Thr Ile Ala Lys Phe Val Ser Pro Met Met Lys Ser				
427	432	437	442	
cgc tgc cac att ctt ggc acc ttc ttt gcc gtg act ctt ctt gct ata				1455
Arg Cys His Ile Leu Gly Thr Phe Phe Ala Val Thr Leu Leu Ala Ile				
443	448	453	458	
ttt tgt aaa aac tgg gac cat atc ctg tgt gcc ata gaa agg atg ata				1503
Phe Cys Lys Asn Trp Asp His Ile Leu Cys Ala Ile Glu Arg Met Ile				
459	464	469	474	
ata cca aga tga agc cactgggttcc tgccttcaag ttctttcaag tttttatttt				1558
Ile Pro Arg *				
475				

aaagaaaact ctgtgcatac taccaaattt tacagtgaat gattgtgcgg actcgtgtgt 1618  
aagaaaaact aggactgtgt ggtgtaaata actacaattc tcttaactcg gtagcagttg 1678  
ccaactcagt ccttgtactt cgtaaacacg gatctgtttc agagctctcc taccttgctc 1738  
actgccttaa tcagaccgat ttctgcccc cctgaccagc ccaacgtggt aaacctctgt 1798

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<212> DNA  
<213> Homo sapiens

<220>  
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<222> (367)..(1026)

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cggagattca caggcggccc gcgaggccga gcgagggaacg catggccctg aggcggccgc 120  
agggcttggc ggggtccgga ggttgacctc gccccgcag cgggccttcg aggctgcctc 180  
ctccaggcag cctctggggc ccgcgcccgc gcctgctcag gctccctgtg tcaggctgcc 240  
catccctccc ccaccggcgt cccggacgtt gggacctgtg accgtggcct cgggctgggc 300  
ttccaaagcc ggccgcagcc cggcgacccc cgaggcctct cgccccgggc ccttagacct 360  
ctcaact atg acc gcg gcc gcc gcc tcc aac tgg ggg ctg atc acg aac 408  
Met Thr Ala Ala Ala Ala Ser Asn Trp Gly Leu Ile Thr Asn  
1 5 10  
atc gtg aac agc atc gta ggg gtc agt gtc ctc acc atg ccc ttc tgc 456  
Ile Val Asn Ser Ile Val Gly Val Ser Val Leu Thr Met Pro Phe Cys  
15 20 25 30  
ttc aaa cag tgc ggc atc gtc ctg ggg gcg ctg ctc ttg gtc ttc tgc 504  
Phe Lys Gln Cys Gly Ile Val Leu Gly Ala Leu Leu Leu Val Phe Cys  
31 36 41 46  
tca tgg atg acg cac cag tgc gtc atg ttc ttg gtg aag tgc gcc agc 552  
Ser Trp Met Thr His Gln Ser Cys Met Phe Leu Val Lys Ser Ala Ser  
47 52 57 62  
ctg agc aag cgg agg acc tac gcc ggc ctg gca ttc cac gcc tac ggg 600  
Leu Ser Lys Arg Arg Thr Tyr Ala Gly Leu Ala Phe His Ala Tyr Gly  
63 68 73 78  
aag gca ggc aag atg ctg gtg gag acc agc atg atc ggg ctg atg ctg 648  
Lys Ala Gly Lys Met Leu Val Glu Thr Ser Met Ile Gly Leu Met Leu  
79 84 89 94

ggc acc tgc atc gcc ttc tac gtc gtg atc ggc gac ttg ggg tcc aac	696
Gly Thr Cys Ile Ala Phe Tyr Val Val Ile Gly Asp Leu Gly Ser Asn	
95 100 105 110	
ttc ttt gcc cgg ctg ttc ggg ttt cag gtg ggc ggc acc ttc cgc atg	744
Phe Phe Ala Arg Leu Phe Gly Phe Gln Val Gly Gly Thr Phe Arg Met	
111 116 121 126	
ttc ctg ctg ttc gcc gtg tcg ctg tgc atc gtg ctc ccg ctc agc ctg	792
Phe Leu Leu Phe Ala Val Ser Leu Cys Ile Val Leu Pro Leu Ser Leu	
127 132 137 142	
cag cgg aac atg atg gcc tcc atc cag tcc ttc agc gcc atg gcc ctc	840
Gln Arg Asn Met Met Ala Ser Ile Gln Ser Phe Ser Ala Met Ala Leu	
143 148 153 158	
ctc ttc tac acc gtg ttt atg ttc gtg atc gtg ctc tcc cct ctc aag	888
Leu Phe Tyr Thr Val Phe Met Phe Val Ile Val Leu Ser Pro Leu Lys	
159 164 169 174	
cac ggc ctc ttc agt ggg cag tgg ctg cgg cgg gtc agc tac gtc cgc	936
His Gly Leu Phe Ser Gly Gln Trp Leu Arg Arg Val Ser Tyr Val Arg	
175 180 185 190	
tgg gag ggc gtc ttc cgc tgc atc ccc atc ttc ggg cat gtc ctt cgc	984
Trp Glu Gly Val Phe Arg Cys Ile Pro Ile Phe Gly His Val Leu Arg	
191 196 201 206	
ctg cca gtc cca agt gct gcc cac cta cga cag cct gga tga gccgtca	1033
Leu Pro Val Pro Ser Ala Ala His Leu Arg Gln Pro Gly *	
207 212 217	
gtgat	1038

<210> 37  
 <211> 6976  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (226) .. (6417)

<400> 37	
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agaattttga tttggctgct gggctgctac cttgaaatcc aagccctaaa aatgccagct	120
tctttggact tagaagatga cctggataaa tgataaaaat taagaaagag attttgaagt	180
tttcttattg tcctcttggc atatgcttct ggaataatat tcacc atg gtt ttg	234
	Met Val Leu

gat gac ctt cca aac tta gaa gac atc tat act tcc ttg tgt tca tca	282
Asp Asp Leu Pro Asn Leu Glu Asp Ile Tyr Thr Ser Leu Cys Ser Ser	
4 9 14 19	
aca atg gaa gac tca gag atg gat ttt gac tct gga cta gaa gat gat	330
Thr Met Glu Asp Ser Glu Met Asp Phe Asp Ser Gly Leu Glu Asp Asp	
20 25 30 35	
gac aca aaa agt gat agt att ttg gag gat tcc aca att ttt gtg gcc	378
Asp Thr Lys Ser Asp Ser Ile Leu Glu Asp Ser Thr Ile Phe Val Ala	
36 41 46 51	
ttc aaa gga aat ata gat gat aaa gac ttc aaa tgg aaa tta gat gca	426
Phe Lys Gly Asn Ile Asp Asp Lys Asp Phe Lys Trp Lys Leu Asp Ala	
52 57 62 67	
ata ttg aaa aac gtg ccc aat ttg tta cac atg gag tcc agc aag cta	474
Ile Leu Lys Asn Val Pro Asn Leu Leu His Met Glu Ser Ser Lys Leu	
68 73 78 83	
aaa gta cag aag gtg gag ccc tgg aac agc gtg cgt gtg aca ttc aac	522
Lys Val Gln Lys Val Glu Pro Trp Asn Ser Val Arg Val Thr Phe Asn	
84 89 94 99	
atc ccc cgg gaa gca gcg gag cgg cta cgg atc ctt gct cag agc aac	570
Ile Pro Arg Glu Ala Ala Glu Arg Leu Arg Ile Leu Ala Gln Ser Asn	
100 105 110 115	
aac cag cag ctt cgg gat tta ggg att ctc tcc gtt cag att gaa ggg	618
Asn Gln Gln Leu Arg Asp Leu Gly Ile Leu Ser Val Gln Ile Glu Gly	
116 121 126 131	
gaa ggt gct att aac ctg gct ttg gct cag aac cga agc caa gat gtg	666
Glu Gly Ala Ile Asn Leu Ala Leu Ala Gln Asn Arg Ser Gln Asp Val	
132 137 142 147	
aga atg aat gga ccc atg gga gct gga aat tca gtt agg atg gag gcg	714
Arg Met Asn Gly Pro Met Gly Ala Gly Asn Ser Val Arg Met Glu Ala	
148 153 158 163	
gga ttt cct atg gca agt ggt cca gga ata ata agg atg aac aac cct	762
Gly Phe Pro Met Ala Ser Gly Pro Gly Ile Ile Arg Met Asn Asn Pro	
164 169 174 179	
gcc act gtt atg ata ccc ccg ggt gga aat gtg tca tct tcc atg atg	810
Ala Thr Val Met Ile Pro Pro Gly Gly Asn Val Ser Ser Ser Met Met	
180 185 190 195	
gca cca ggc ccc aat cca gag ctg cag ccc agg act cct cgc cct gct	858
Ala Pro Gly Pro Asn Pro Glu Leu Gln Pro Arg Thr Pro Arg Pro Ala	
196 201 206 211	
tct cag tca gat gca atg gat cca ctc ctc tct ggg ctc cat ata cag	906
Ser Gln Ser Asp Ala Met Asp Pro Leu Leu Ser Gly Leu His Ile Gln	
212 217 222 227	

cag caa agt cat ccc tca gga tct tta gct ccc cca cat cac cca atg Gln Gln Ser His Pro Ser Gly Ser Leu Ala Pro Pro His His Pro Met 228 233 238 243	954
cag cct gtc tct gtg aac aga caa atg aac cca gct aat ttt ccc cag Gln Pro Val Ser Val Asn Arg Gln Met Asn Pro Ala Asn Phe Pro Gln 244 249 254 259	1002
ctg cag cag cag cag caa caa caa caa cag cag cag cag cag cag cag Leu Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln 260 265 270 275	1050
cag caa caa cag caa cag cag caa caa cag ttg cag gca aga ccc cca Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln 276 281 286 291	1098
cag caa cat cag cag caa cag cca cag gga att cga ccc cag ttt act Gln Gln His Gln Gln Gln Gln Pro Gln Gly Ile Arg Pro Gln Phe Thr 292 297 302 307	1146
gcc cca act cag gtg cct gtt cct cca gcc tgg aac cag ctg cct tct Ala Pro Thr Gln Val Pro Val Pro Pro Gly Trp Asn Gln Leu Pro Ser 308 313 318 323	1194
gga gcc ctt caa cct cct cca gcc cag ggt tct ctg gcc aca atg act Gly Ala Leu Gln Pro Pro Pro Ala Gln Gly Ser Leu Gly Thr Met Thr 324 329 334 339	1242
gca aac caa ggg tgg aag aag gct ccc ttg ccc gcc cca atg caa cag Ala Asn Gln Gly Trp Lys Lys Ala Pro Leu Pro Gly Pro Met Gln Gln 340 345 350 355	1290
caa ctc cag gca aga cca tcc tta gcc acg gta cag acg cct tcc cac Gln Leu Gln Ala Arg Pro Ser Leu Ala Thr Val Gln Thr Pro Ser His 356 361 366 371	1338
cct ccc cct cca tat ccc ttt ggc agc cag caa gcc tca caa gcc cac Pro Pro Pro Pro Tyr Pro Phe Gly Ser Gln Gln Ala Ser Gln Ala His 372 377 382 387	1386
aca aac ttt cct cag atg agc aac cca gcc cag ttc aca gct cct cag Thr Asn Phe Pro Gln Met Ser Asn Pro Gly Gln Phe Thr Ala Pro Gln 388 393 398 403	1434
atg aag agt ttg cag gga ggg ccc tct agg gtc cca act ccc ttg cag Met Lys Ser Leu Gln Gly Gly Pro Ser Arg Val Pro Thr Pro Leu Gln 404 409 414 419	1482
cag ccc cac ctc acc aac aag tct cct gcc tcc tca ccc tcc tcc ttc Gln Pro His Leu Thr Asn Lys Ser Pro Ala Ser Ser Pro Ser Ser Phe 420 425 430 435	1530
cag cag gga tcc cct gca tcc tcc cca acg gtt aac caa act cag cag Gln Gln Gly Ser Pro Ala Ser Ser Pro Thr Val Asn Gln Thr Gln Gln 436 441 446 451	1578
cag atg gga cca agg cca cct caa aat aac cca ctt ccc cag gga ttt	1626

Gln Met Gly Pro Arg	Pro Pro Gln Asn Asn	Pro Leu Pro Gln Gly Phe	
452	457	462	467
cag cag cct gtc agc	tct ccg ggt cgg aat	cct atg gtt caa cag gga	1674
Gln Gln Pro Val Ser	Ser Pro Gly Arg Asn	Pro Met Val Gln Gln Gly	
468	473	478	483
aat gtg cca cct aac	ttc atg gtg atg cag	cag caa cca cca aac cag	1722
Asn Val Pro Pro Asn	Phe Met Val Met Gln	Gln Gln Pro Pro Asn Gln	
484	489	494	499
ggg cca cag agt tta	cat cca ggc cta gga	gga atg cct aaa cgc ctc	1770
Gly Pro Gln Ser Leu	His Pro Gly Leu Gly	Gly Met Pro Lys Arg Leu	
500	505	510	515
cca cct ggc ttc tca	gca gga cag gcc aat	ccg aac ttt atg caa ggt	1818
Pro Pro Gly Phe Ser	Ala Gly Gln Ala Asn	Pro Asn Phe Met Gln Gly	
516	521	526	531
cag gtg cct tcg acc	aca gca acc acc cct	ggg aat tca gga gcc cct	1866
Gln Val Pro Ser Thr	Thr Ala Thr Thr Pro	Gly Asn Ser Gly Ala Pro	
532	537	542	547
cag ctg caa gca aat	caa aat gtc cag cat	gca ggt ggt caa gga gct	1914
Gln Leu Gln Ala Asn	Gln Asn Val Gln His	Ala Gly Gly Gln Gly Ala	
548	553	558	563
ggt cct cct caa aac	cag atg cag gtg tcc	cac ggg ccg cca aat atg	1962
Gly Pro Pro Gln Asn	Gln Met Gln Val Ser	His Gly Pro Pro Asn Met	
564	569	574	579
atg cag ccc agc ctc	atg gga att cat ggc	aac atg aac aat cag cag	2010
Met Gln Pro Ser Leu	Met Gly Ile His Gly	Asn Met Asn Asn Gln Gln	
580	585	590	595
gct ggt act tct ggg	gtt cct caa gtg aac	ctc agc aac atg caa ggc	2058
Ala Gly Thr Ser Gly	Val Pro Gln Val Asn	Leu Ser Asn Met Gln Gly	
596	601	606	611
cag ccc cag cag ggc	cca cca tct cag ctg	atg ggc atg cac cag caa	2106
Gln Pro Gln Gln Gly	Pro Pro Ser Gln Leu	Met Gly Met His Gln Gln	
612	617	622	627
atc gtg ccc tcc cag	ggc cag atg gtc cag	caa caa gga acc ttg aac	2154
Ile Val Pro Ser Gln	Gly Gln Met Val Gln	Gln Gln Gly Thr Leu Asn	
628	633	638	643
cct cag aac cct atg	atc ctt tca agg gcc	cag ctt atg cca cag ggc	2202
Pro Gln Asn Pro Met	Ile Leu Ser Arg Ala	Gln Leu Met Pro Gln Gly	
644	649	654	659
cag atg atg gtg aac	ccc ccg agc caa aat	ctt ggg ccc tcg ccc caa	2250
Gln Met Met Val Asn	Pro Pro Ser Gln Asn	Leu Gly Pro Ser Pro Gln	
660	665	670	675
agg atg acc cca ccc	aag cag atg ctt tcc	cag cag ggc cca caa atg	2298
Arg Met Thr Pro Pro	Lys Gln Met Leu Ser	Gln Gln Gly Pro Gln Met	



676	681	686	691	
atg gcg cca cat aac	cag atg atg ggg cct	cag ggg cag gtt ttg ctc		2346
Met Ala Pro His Asn	Gln Met Met Gly Pro	Gln Gly Gln Val Leu Leu		
692	697	702	707	
caa cag aac cca atg	ata gag cag att atg	acc aat caa atg cag ggg		2394
Gln Gln Asn Pro Met	Ile Glu Gln Ile Met	Thr Asn Gln Met Gln Gly		
708	713	718	723	
aat aag cag cag ttt	aac act cag aac cag	tcc aat gtc atg ccg gga		2442
Asn Lys Gln Gln Phe	Asn Thr Gln Asn Gln	Ser Asn Val Met Pro Gly		
724	729	734	739	
cca gcc cag ata atg	agg gga cca act cca	aac atg caa gga aat atg		2490
Pro Ala Gln Ile Met	Arg Gly Pro Thr Pro	Asn Met Gln Gly Asn Met		
740	745	750	755	
gtg cag ttt acg gga	cag atg tca gga cag	atg ctg ccc cag caa ggg		2538
Val Gln Phe Thr Gly	Gln Met Ser Gly Gln	Met Leu Pro Gln Gln Gly		
756	761	766	771	
cct gtg aac aac agt	cca tct cag gtt atg	ggc att cag gga cag gtc		2586
Pro Val Asn Asn Ser	Pro Ser Gln Val Met	Gly Ile Gln Gly Gln Val		
772	777	782	787	
ctg cgg cca cca ggg	ccc agc cca cac atg	gcc cag cag cat ggt gat		2634
Leu Arg Pro Pro Gly	Pro Ser Pro His Met	Ala Gln Gln His Gly Asp		
788	793	798	803	
cct gct act aca gca	aat aac gat gtc agt	tta tct cag atg atg cct		2682
Pro Ala Thr Thr Ala	Asn Asn Asp Val Ser	Leu Ser Gln Met Met Pro		
804	809	814	819	
gat gtt agc att caa	caa acc aac atg gtc	ccc cct cat gtg cag gcc		2730
Asp Val Ser Ile Gln	Gln Thr Asn Met Val	Pro Pro His Val Gln Ala		
820	825	830	835	
atg cag gga aac agt	gcc tcg gga aac cac	ttc tca ggc cat ggg atg		2778
Met Gln Gly Asn Ser	Ala Ser Gly Asn His	Phe Ser Gly His Gly Met		
836	841	846	851	
tct ttc aat gca cct	ttc agt gga gct ccc	aat gga aat cag atg tcc		2826
Ser Phe Asn Ala Pro	Phe Ser Gly Ala Pro	Asn Gly Asn Gln Met Ser		
852	857	862	867	
tgt ggt caa aat cca	ggc ttc cca gtc aat	aag gat gtc acg cta acg		2874
Cys Gly Gln Asn Pro	Gly Phe Pro Val Asn	Lys Asp Val Thr Leu Thr		
868	873	878	883	
agc cca ttg ttg gtc	aac tta ttg cag agt	gac ata tct gca ggc cat		2922
Ser Pro Leu Leu Val	Asn Leu Leu Gln Ser	Asp Ile Ser Ala Gly His		
884	889	894	899	
ttt ggg gta aac aat	aag caa aat aat acc	aac gca aat aaa ccg aag		2970
Phe Gly Val Asn Asn	Lys Gln Asn Asn Thr	Asn Ala Asn Lys Pro Lys		
900	905	910	915	

aag aag aaa ccc cct cgg aag aag aaa aat agt cag caa gat cta aac	3018
Lys Lys Lys Pro Pro Arg Lys Lys Lys Asn Ser Gln Gln Asp Leu Asn	
916 921 926 931	
acc cca gat act cgc cca gct ggt ctg gaa gag gct gat cag cca ccg	3066
Thr Pro Asp Thr Arg Pro Ala Gly Leu Glu Glu Ala Asp Gln Pro Pro	
932 937 942 947	
ttg cct gga gaa caa gga att agc ttg gat aac tca ggc cct aaa ctg	3114
Leu Pro Gly Glu Gln Gly Ile Ser Leu Asp Asn Ser Gly Pro Lys Leu	
948 953 958 963	
cca gaa ttt tca aac cgg cca cca ggt tat cct tct caa cca gtt gaa	3162
Pro Glu Phe Ser Asn Arg Pro Pro Gly Tyr Pro Ser Gln Pro Val Glu	
964 969 974 979	
cag agg cca ctt cag cag atg cct cct caa ctc atg cag cat gtg gca	3210
Gln Arg Pro Leu Gln Gln Met Pro Pro Gln Leu Met Gln His Val Ala	
980 985 990 995	
ccc cca cca cag cca cca cag cag cag cca cag cca caa ctg cct cag	3258
Pro Pro Pro Gln Pro Pro Gln Gln Gln Pro Gln Pro Gln Leu Pro Gln	
996 1001 1006 1011	
cag cag cag cca cca cct ccc agt cag cca cag tct cag cag cag cag	3306
Gln Gln Gln Pro Pro Pro Pro Ser Gln Pro Gln Ser Gln Gln Gln Gln	
1012 1017 1022 1027	
cag cag cag caa caa atg atg atg atg ctc atg atg cag cag gat ccc	3354
Gln Gln Gln Gln Gln Met Met Met Met Leu Met Met Gln Gln Asp Pro	
1028 1033 1038 1043	
aaa tca gtt agg ctt cca gtc tct caa aat gtc cat cct cca agg ggc	3402
Lys Ser Val Arg Leu Pro Val Ser Gln Asn Val His Pro Pro Arg Gly	
1044 1049 1054 1059	
ccc ctg aac ccc gac tcc cag aga atg ccc atg caa cag agt ggc agt	3450
Pro Leu Asn Pro Asp Ser Gln Arg Met Pro Met Gln Gln Ser Gly Ser	
1060 1065 1070 1075	
gtg cct gtc atg gtc agt ctg caa gga cct gcc tcc gtg cca cca tca	3498
Val Pro Val Met Val Ser Leu Gln Gly Pro Ala Ser Val Pro Pro Ser	
1076 1081 1086 1091	
cct gat aaa caa aga atg cca atg cct gtg aat act ccc ttg gga agc	3546
Pro Asp Lys Gln Arg Met Pro Met Pro Val Asn Thr Pro Leu Gly Ser	
1092 1097 1102 1107	
aat tca agg aaa atg gtc tat cag gag agc ccg cag aat cct tcc agc	3594
Asn Ser Arg Lys Met Val Tyr Gln Glu Ser Pro Gln Asn Pro Ser Ser	
1108 1113 1118 1123	
tcg cca ctg gcg gag atg gcc tca ctc cct gaa gca agt ggc agt gaa	3642
Ser Pro Leu Ala Glu Met Ala Ser Leu Pro Glu Ala Ser Gly Ser Glu	
1124 1129 1134 1139	

gca cca tct gtc cca gga ggc cca aac aac atg cct tca cat gta gta	3690
Ala Pro Ser Val Pro Gly Gly Pro Asn Asn Met Pro Ser His Val Val	
1140 1145 1150 1155	
ctt ccc cag aat cag tta atg atg aca ggg cca aaa cct gga cca tcg	3738
Leu Pro Gln Asn Gln Leu Met Met Thr Gly Pro Lys Pro Gly Pro Ser	
1156 1161 1166 1171	
ccc ctt tca gca act caa ggt gca act ccc cag caa ccc cct gta aat	3786
Pro Leu Ser Ala Thr Gln Gly Ala Thr Pro Gln Gln Pro Pro Val Asn	
1172 1177 1182 1187	
tcc ctg ccc agc tct cac ggc cac cac ttc cca aat gtg gct gcg cca	3834
Ser Leu Pro Ser Ser His Gly His His Phe Pro Asn Val Ala Ala Pro	
1188 1193 1198 1203	
acc cag aca tct agg ccc aaa aca cca aac aga gcc agc ccc aga ccc	3882
Thr Gln Thr Ser Arg Pro Lys Thr Pro Asn Arg Ala Ser Pro Arg Pro	
1204 1209 1214 1219	
tat tat cct cag aca ccc aac aac cgc cct ccc agc aca gaa cct tca	3930
Tyr Tyr Pro Gln Thr Pro Asn Asn Arg Pro Pro Ser Thr Glu Pro Ser	
1220 1225 1230 1235	
gaa atc agt ctg tca cca gaa aga ctc aat gcc tcc ata gca gga ctc	3978
Glu Ile Ser Leu Ser Pro Glu Arg Leu Asn Ala Ser Ile Ala Gly Leu	
1236 1241 1246 1251	
ttc cct cca cag att aat att cct tta cct cct agg cca aat tta aac	4026
Phe Pro Pro Gln Ile Asn Ile Pro Leu Pro Pro Arg Pro Asn Leu Asn	
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agg ggc ttt gat caa caa ggc cta aat ccg aca att ttg aag gcc atc	4074
Arg Gly Phe Asp Gln Gln Gly Leu Asn Pro Thr Ile Leu Lys Ala Ile	
1268 1273 1278 1283	
ggg caa gca cct tca aat ctt acc atg aat cct tcc aat ttt gct acc	4122
Gly Gln Ala Pro Ser Asn Leu Thr Met Asn Pro Ser Asn Phe Ala Thr	
1284 1289 1294 1299	
cca caa act cac aaa tta gat tct gtg gta gtg aat tct gga aag cag	4170
Pro Gln Thr His Lys Leu Asp Ser Val Val Val Asn Ser Gly Lys Gln	
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tct aat tct gga gca aca aaa cgg gca agt cca agc aac agt cgc agg	4218
Ser Asn Ser Gly Ala Thr Lys Arg Ala Ser Pro Ser Asn Ser Arg Arg	
1316 1321 1326 1331	
tct agt cct ggg tcc agt agg aaa acc act cca agc cct ggg agg caa	4266
Ser Ser Pro Gly Ser Ser Arg Lys Thr Thr Pro Ser Pro Gly Arg Gln	
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aat tca aaa gcc cct aaa ctt act ctg gcc tct cag aca aat gca gcc	4314
Asn Ser Lys Ala Pro Lys Leu Thr Leu Ala Ser Gln Thr Asn Ala Ala	
1348 1353 1358 1363	
cta ttg cag aat gtg gag ttg ccg aga aat gta ttg gtc agt ccc act	4362

Leu Leu Gln Asn Val Glu Leu Pro Arg Asn Val Leu Val Ser Pro Thr	
1364 1369 1374 1379	
cct ctg gcc aat ccc cct gta cct ggg agc ttt cct aac aac agt ggg	4410
Pro Leu Ala Asn Pro Pro Val Pro Gly Ser Phe Pro Asn Asn Ser Gly	
1380 1385 1390 1395	
ctg aat cct cag aat tct act gtg tct gtg gct gca gtt ggg ggt gtt	4458
Leu Asn Pro Gln Asn Ser Thr Val Ser Val Ala Ala Val Gly Gly Val	
1396 1401 1406 1411	
gtt gag gat aac aag gag agc ttg aat gtg cct cag gac agt gat tgc	4506
Val Glu Asp Asn Lys Glu Ser Leu Asn Val Pro Gln Asp Ser Asp Cys	
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cag aat tcc cag agt agg aag gaa cag gta aac att gaa cta aaa gca	4554
Gln Asn Ser Gln Ser Arg Lys Glu Gln Val Asn Ile Glu Leu Lys Ala	
1428 1433 1438 1443	
gtc cct gcc caa gaa gtt aaa atg gtt gtc cct gaa gat cag tcc aaa	4602
Val Pro Ala Gln Glu Val Lys Met Val Val Pro Glu Asp Gln Ser Lys	
1444 1449 1454 1459	
aag gat ggg cag cct tcg gat cct aac aaa ctt ccc agt gtc gaa gag	4650
Lys Asp Gly Gln Pro Ser Asp Pro Asn Lys Leu Pro Ser Val Glu Glu	
1460 1465 1470 1475	
aac aaa aat ttg gtg tct cct gct atg agg gaa gca cca aca tcg tta	4698
Asn Lys Asn Leu Val Ser Pro Ala Met Arg Glu Ala Pro Thr Ser Leu	
1476 1481 1486 1491	
agt caa ctt ctt gac aac tct gga gct ccc aat gtg aca att aaa ccc	4746
Ser Gln Leu Leu Asp Asn Ser Gly Ala Pro Asn Val Thr Ile Lys Pro	
1492 1497 1502 1507	
cct ggg ctt aca gat ctg gaa gta aca cct cca gta gtt tct ggg gag	4794
Pro Gly Leu Thr Asp Leu Glu Val Thr Pro Pro Val Val Ser Gly Glu	
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gac ctc aaa aaa gca tct gtc att ccc aca ctg cag gat ctg tct tct	4842
Asp Leu Lys Lys Ala Ser Val Ile Pro Thr Leu Gln Asp Leu Ser Ser	
1524 1529 1534 1539	
tct aaa gaa cct tct aat tcc cta aac tta cct cac agt aat gag ctg	4890
Ser Lys Glu Pro Ser Asn Ser Leu Asn Leu Pro His Ser Asn Glu Leu	
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tgt tca tcc ctt gtg cat ccc gaa ttg agt gag gtc agt tct aac gtt	4938
Cys Ser Ser Leu Val His Pro Glu Leu Ser Glu Val Ser Ser Asn Val	
1556 1561 1566 1571	
gca cca agc atc cct cca gta atg tca aga cct gtt agc tct tcc tcc	4986
Ala Pro Ser Ile Pro Pro Val Met Ser Arg Pro Val Ser Ser Ser Ser	
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att tcc act ccc ttg ccc cca aat caa ata act gta ttt gtc act tcc	5034
Ile Ser Thr Pro Leu Pro Pro Asn Gln Ile Thr Val Phe Val Thr Ser	

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Asn Pro Ile Thr Thr Ser Ala Asn Thr Ser Ala Ala Leu Pro Thr His				
1604	1609	1614	1619	
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Leu Gln Ser Ala Leu Met Ser Thr Val Val Thr Met Pro Asn Ala Gly				
1620	1625	1630	1635	
agc aag gtt atg gtt tct gag gga cag tca gct gct cag tct aat gcc				5178
Ser Lys Val Met Val Ser Glu Gly Gln Ser Ala Ala Gln Ser Asn Ala				
1636	1641	1646	1651	
cgg cct cag ttc att aca cct gtc ttt atc aat tca tcc tca ata att				5226
Arg Pro Gln Phe Ile Thr Pro Val Phe Ile Asn Ser Ser Ser Ile Ile				
1652	1657	1662	1667	
cag gtt atg aaa gga tca cag cca agc aca att cct gca gcc cca ctg				5274
Gln Val Met Lys Gly Ser Gln Pro Ser Thr Ile Pro Ala Ala Pro Leu				
1668	1673	1678	1683	
aca acc aac tct ggc ctg atg cct ccc tct gtt gca gtt gtt ggc cct				5322
Thr Thr Asn Ser Gly Leu Met Pro Pro Ser Val Ala Val Val Gly Pro				
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tta cac ata cct cag aac ata aaa ttt tct tct gct cct gta ccg cct				5370
Leu His Ile Pro Gln Asn Ile Lys Phe Ser Ser Ala Pro Val Pro Pro				
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aat gcc ctc tcc agt agt cct gct cca aac atc cag aca ggt cga cct				5418
Asn Ala Leu Ser Ser Ser Pro Ala Pro Asn Ile Gln Thr Gly Arg Pro				
1716	1721	1726	1731	
ttg gtc ctt agc tca cga gcc acc cct gtt cag ctt cct tcc cct cct				5466
Leu Val Leu Ser Ser Arg Ala Thr Pro Val Gln Leu Pro Ser Pro Pro				
1732	1737	1742	1747	
tgt acg tct tct cca gtt gtc cct tct cat ccc cct gtg cag caa gtg				5514
Cys Thr Ser Ser Pro Val Val Pro Ser His Pro Pro Val Gln Gln Val				
1748	1753	1758	1763	
aaa gaa ttg aat cca gat gag gct agc cct cag gtg aac acc tca gca				5562
Lys Glu Leu Asn Pro Asp Glu Ala Ser Pro Gln Val Asn Thr Ser Ala				
1764	1769	1774	1779	
gat cag aac act ctt ccc tct tca cag tca acc aca atg gtt tct ccc				5610
Asp Gln Asn Thr Leu Pro Ser Ser Gln Ser Thr Thr Met Val Ser Pro				
1780	1785	1790	1795	
ctt ttg acc aat agt cca ggg tcc tct ggc aac cgg cga agc cca gtc				5658
Leu Leu Thr Asn Ser Pro Gly Ser Ser Gly Asn Arg Arg Ser Pro Val				
1796	1801	1806	1811	
tcg tct agt aag ggc aaa gga aaa gtg gac aaa att ggc caa att ttg				5706
Ser Ser Ser Lys Gly Lys Gly Lys Val Asp Lys Ile Gly Gln Ile Leu				
1812	1817	1822	1827	

ttg acc aag gca tgt aag aaa gtt aca ggc tct ctt gag aaa ggg gaa	5754
Leu Thr Lys Ala Cys Lys Lys Val Thr Gly Ser Leu Glu Lys Gly Glu	
1828 1833 1838 1843	
gaa caa tat ggt gca gat gga gag act gaa ggc caa ggg cta gac acc	5802
Glu Gln Tyr Gly Ala Asp Gly Glu Thr Glu Gly Gln Gly Leu Asp Thr	
1844 1849 1854 1859	
aca gct ccg ggg ctc atg gga aca gag cag tta tcc aca gag ctg gac	5850
Thr Ala Pro Gly Leu Met Gly Thr Glu Gln Leu Ser Thr Glu Leu Asp	
1860 1865 1870 1875	
agt aaa acc cca acg ccc cca gca ccc act ctg cta aaa atg acc tct	5898
Ser Lys Thr Pro Thr Pro Pro Ala Pro Thr Leu Leu Lys Met Thr Ser	
1876 1881 1886 1891	
agc cct gtg ggc ccg ggc act gcc tca gca gga ccc agc tta cct ggc	5946
Ser Pro Val Gly Pro Gly Thr Ala Ser Ala Gly Pro Ser Leu Pro Gly	
1892 1897 1902 1907	
ggt gct ctc ccc acc agt gta cgc tcg ata gta acc act ctg gta ccc	5994
Gly Ala Leu Pro Thr Ser Val Arg Ser Ile Val Thr Thr Leu Val Pro	
1908 1913 1918 1923	
tcc gag ctc atc tcc gcc gta ccg acc aca aaa agc aat cat ggt ggc	6042
Ser Glu Leu Ile Ser Ala Val Pro Thr Thr Lys Ser Asn His Gly Gly	
1924 1929 1934 1939	
ata gca tct gag tca ctt gcg ggt ggc cta gtg gag gag aag gtg gga	6090
Ile Ala Ser Glu Ser Leu Ala Gly Gly Leu Val Glu Glu Lys Val Gly	
1940 1945 1950 1955	
tcc cat cca gaa ctt cta ccc agc ata gcc ccg tcg cag aat tta gtc	6138
Ser His Pro Glu Leu Leu Pro Ser Ile Ala Pro Ser Gln Asn Leu Val	
1956 1961 1966 1971	
tca aag gaa act tca acc aca gca ctg cag gcc tct gtt gcc aga cca	6186
Ser Lys Glu Thr Ser Thr Thr Ala Leu Gln Ala Ser Val Ala Arg Pro	
1972 1977 1982 1987	
gag ctg gag gta aat gct gcc ata gtc tct gga caa agc agt gag ccc	6234
Glu Leu Glu Val Asn Ala Ala Ile Val Ser Gly Gln Ser Ser Glu Pro	
1988 1993 1998 2003	
aaa gag ata gtt gaa aag tcc aaa atc cca ggc cga aga aac tcc cga	6282
Lys Glu Ile Val Glu Lys Ser Lys Ile Pro Gly Arg Arg Asn Ser Arg	
2004 2009 2014 2019	
act gaa gag cca act gtg gcc tct gaa agt gtg gaa aat gga cat cgt	6330
Thr Glu Glu Pro Thr Val Ala Ser Glu Ser Val Glu Asn Gly His Arg	
2020 2025 2030 2035	
aaa cga tct tct cga cct gct tca gcc tcc agc tct act aaa gac ata	6378
Lys Arg Ser Ser Arg Pro Ala Ser Ala Ser Ser Ser Thr Lys Asp Ile	
2036 2041 2046 2051	

acc agt gcg gtg caa tcc aag cga aga aaa tcc aag taa acaagcagga 6427  
 Thr Ser Ala Val Gln Ser Lys Arg Arg Lys Ser Lys \*  
 2052 2057 2062

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 tttgtttag aaatggacca gtgaataaag agaactaag gattttgtaca atgtgaaata 6907  
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 Met Arg Leu Lys Ile Gly Phe Ile Leu  
 1 5

cgc agt ttg ctg gtg gtg gga agc ttc ctg ggg cta gtg gtc ctc tgg 161  
 Arg Ser Leu Leu Val Val Gly Ser Phe Leu Gly Leu Val Val Leu Trp  
 10 15 20 25

tct tcc ctg acc ccg cgg ccg gac gac cca agc ccg ctg agc agg atg 209  
 Ser Ser Leu Thr Pro Arg Pro Asp Asp Pro Ser Pro Leu Ser Arg Met  
 26 31 36 41

agg gaa gac aga gat gtc aat gac ccc atg ccc aac cga ggc ggc aat 257  
 Arg Glu Asp Arg Asp Val Asn Asp Pro Met Pro Asn Arg Gly Gly Asn  
 42 47 52 57

gga cta gct cct ggg gag gac aga ttc aaa cct gtg gta cca tgg cct 305  
 Gly Leu Ala Pro Gly Glu Asp Arg Phe Lys Pro Val Val Pro Trp Pro

58	63	68	73	
cat gtt gaa gga gta gaa gtg gac tta gag tct att aga aga ata aac				353
His Val Glu Gly Val Glu Val Asp Leu Glu Ser Ile Arg Arg Ile Asn				
74	79	84	89	
aag gcc aaa aat gaa caa gag cac cat gct gga gga gat tcc cag aaa				401
Lys Ala Lys Asn Glu Gln Glu His His Ala Gly Gly Asp Ser Gln Lys				
90	95	100	105	
gat atc atg cag agg cag tat ctc aca ttt aag cct cag aca ttc acc				449
Asp Ile Met Gln Arg Gln Tyr Leu Thr Phe Lys Pro Gln Thr Phe Thr				
106	111	116	121	
tac cat gat cct gtg ctt cgc cca ggg atc ctc ggt aac ttt gaa ccc				497
Tyr His Asp Pro Val Leu Arg Pro Gly Ile Leu Gly Asn Phe Glu Pro				
122	127	132	137	
aaa gaa cct gag cct cct gga gtg gtt ggt ggc cct ggg aga gaa agc				545
Lys Glu Pro Glu Pro Pro Gly Val Val Gly Gly Pro Gly Arg Glu Ser				
138	143	148	153	
caa gcc att ggt ttt ggg gcc cag aat tta aac aag caa ttc aag cca				593
Gln Ala Ile Gly Phe Gly Ala Gln Asn Leu Asn Lys Gln Phe Lys Pro				
154	159	164	169	
gca ttt aaa gag ttt ggg ttt aac atg gtg gca agt gac atg ttc tca				641
Ala Phe Lys Glu Phe Gly Phe Asn Met Val Ala Ser Asp Met Phe Ser				
170	175	180	185	
ctg gac cgc aac gtc aat gac tta cgc caa gaa gaa tgc aag tat tgg				689
Leu Asp Arg Asn Val Asn Asp Leu Arg Gln Glu Glu Cys Lys Tyr Trp				
186	191	196	201	
cat tat gat gaa aac ttg ctc act tcg agc gtt gtc att gtc ttc cat				737
His Tyr Asp Glu Asn Leu Leu Thr Ser Ser Val Val Ile Val Phe His				
202	207	212	217	
aat gaa gga tgg tca acc ctc atg aga aca gtc cac agt gta att aaa				785
Asn Glu Gly Trp Ser Thr Leu Met Arg Thr Val His Ser Val Ile Lys				
218	223	228	233	
agg act cca agg aaa tat tta gca gaa att gtg tta att gac gat ttc				833
Arg Thr Pro Arg Lys Tyr Leu Ala Glu Ile Val Leu Ile Asp Asp Phe				
234	239	244	249	
agt aat aaa gaa cac tta aaa gaa aaa ctg gat gaa tat att aag ctg				881
Ser Asn Lys Glu His Leu Lys Glu Lys Leu Asp Glu Tyr Ile Lys Leu				
250	255	260	265	
tgg aat ggc cta gtg aag gta ttt cga aat gaa aga agg gaa ggt tta				929
Trp Asn Gly Leu Val Lys Val Phe Arg Asn Glu Arg Arg Glu Gly Leu				
266	271	276	281	
att caa gca cga agt att ggt gct cag aag gct aaa ctt gga cag gtt				977
Ile Gln Ala Arg Ser Ile Gly Ala Gln Lys Ala Lys Leu Gly Gln Val				
282	287	292	297	



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Leu Ile Tyr Leu Asp Ala His Cys Glu Val Ala Val Asn Trp Tyr Ala	
298 303 308 313	
cca ctt gta gct ccc ata tct aag gac aga acc att tgc act gtg ccg	1073
Pro Leu Val Ala Pro Ile Ser Lys Asp Arg Thr Ile Cys Thr Val Pro	
314 319 324 329	
ctt ata gat gtc ata aat ggc aac aca tat gaa att ata ccc caa ggg	1121
Leu Ile Asp Val Ile Asn Gly Asn Thr Tyr Glu Ile Ile Pro Gln Gly	
330 335 340 345	
ggg ggt gat gaa gat ggg tat gcc cga gga gca tgg gat tgg agt atg	1169
Gly Gly Asp Glu Asp Gly Tyr Ala Arg Gly Ala Trp Asp Trp Ser Met	
346 351 356 361	
ctc tgg aaa cgg gtg cct ctg acc cct caa gag aag aga ctg aga aag	1217
Leu Trp Lys Arg Val Pro Leu Thr Pro Gln Glu Lys Arg Leu Arg Lys	
362 367 372 377	
aca aaa act gaa ccg tat cgg tcc cca gcc atg gct ggg gga tta tgt	1265
Thr Lys Thr Glu Pro Tyr Arg Ser Pro Ala Met Ala Gly Gly Leu Cys	
378 383 388 393	
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Ala Ile Glu Arg Glu Phe Phe Phe Glu Leu Gly Leu Tyr Asp Pro Gly	
394 399 404 409	
ctc cag att tgg ggt ggt gaa aac ttt gag atc tca tac aag ata tgg	1361
Leu Gln Ile Trp Gly Gly Glu Asn Phe Glu Ile Ser Tyr Lys Ile Trp	
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Gln Cys Gly Gly Lys Leu Leu Phe Val Pro Cys Ser Arg Val Gly His	
426 431 436 441	
atc tac cgt ctt gag ggc tgg caa gga aat cct ccg ccc att tat gtt	1457
Ile Tyr Arg Leu Glu Gly Trp Gln Gly Asn Pro Pro Pro Ile Tyr Val	
442 447 452 457	
ggg tct tct cca act ctg aag aat tat gtt aga gtt gtg gag gtt tgg	1505
Gly Ser Ser Pro Thr Leu Lys Asn Tyr Val Arg Val Val Glu Val Trp	
458 463 468 473	
tgg gat gaa tat aaa gac tac ttc tat gct agt cgt cct gaa tcg cag	1553
Trp Asp Glu Tyr Lys Asp Tyr Phe Tyr Ala Ser Arg Pro Glu Ser Gln	
474 479 484 489	
gca tta cca tat ggg gat ata tcg gag ctg aaa aaa ttt cga gaa gat	1601
Ala Leu Pro Tyr Gly Asp Ile Ser Glu Leu Lys Lys Phe Arg Glu Asp	
490 495 500 505	
cac aac tgc aaa agt ttt aag tgg ttc atg gaa gaa ata gct tat gat	1649
His Asn Cys Lys Ser Phe Lys Trp Phe Met Glu Glu Ile Ala Tyr Asp	
506 511 516 521	

atc acc tca cac tac cct ttg cca ccc aaa aat gtt gac tgg gga gaa	1697
Ile Thr Ser His Tyr Pro Leu Pro Pro Lys Asn Val Asp Trp Gly Glu	
522 527 532 537	
atc aga ggc ttc gaa act gct tac tgc att gat agc atg gga aaa aca	1745
Ile Arg Gly Phe Glu Thr Ala Tyr Cys Ile Asp Ser Met Gly Lys Thr	
538 543 548 553	
aat gga ggc ttt gtt gaa cta gga ccc tgc cac agg atg gga ggg aat	1793
Asn Gly Gly Phe Val Glu Leu Gly Pro Cys His Arg Met Gly Gly Asn	
554 559 564 569	
cag ctt ttc aga atc aat gaa gca aat caa ctc atg cag tat gac cag	1841
Gln Leu Phe Arg Ile Asn Glu Ala Asn Gln Leu Met Gln Tyr Asp Gln	
570 575 580 585	
tgt ttg aca aag gga gct gat gga tca aaa gtt atg att aca cac tgt	1889
Cys Leu Thr Lys Gly Ala Asp Gly Ser Lys Val Met Ile Thr His Cys	
586 591 596 601	
aat cta aat gaa ttt aag gaa tgg cag tac ttc aag aac ctg cac aga	1937
Asn Leu Asn Glu Phe Lys Glu Trp Gln Tyr Phe Lys Asn Leu His Arg	
602 607 612 617	
ttt act cat att cct tca gga aag tgt tta gat cgc tca gag gtc ctg	1985
Phe Thr His Ile Pro Ser Gly Lys Cys Leu Asp Arg Ser Glu Val Leu	
618 623 628 633	
cat caa gta ttc atc tcc aat tgt gac tcc agt aaa acg act caa aaa	2033
His Gln Val Phe Ile Ser Asn Cys Asp Ser Ser Lys Thr Thr Gln Lys	
634 639 644 649	
tgg gaa atg aat aac atc cat agt gtt tag a gagaaaaaaaa taaaccaata	2084
Trp Glu Met Asn Asn Ile His Ser Val *	
650 655	
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			Met Gly Leu Val Ala Ile Ser Thr Val				
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tca ttt tca atc agt gcc ttt tct gag aca gat aca cag agc aca gga							459
Ser Phe Ser Ile Ser Ala Phe Ser Glu Thr Asp Thr Gln Ser Thr Gly							
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gag gcc agt gtt gta agt ggc cct agg gta gca cag ggt tac cat cag							507
Glu Ala Ser Val Val Ser Gly Pro Arg Val Ala Gln Gly Tyr His Gln							
26	31		36		41		
aga act ctc tta gat tta aat gac aag att ctg gat tat act cca cag							555
Arg Thr Leu Leu Asp Leu Asn Asp Lys Ile Leu Asp Tyr Thr Pro Gln							
42	47		52		57		
cca cct ctt tct aag gaa ggc gag tct gag aat agt aca gat cac gcc							603
Pro Pro Leu Ser Lys Glu Gly Glu Ser Glu Asn Ser Thr Asp His Ala							
58	63		68		73		
caa gga gac tac ccg aaa gac atc ttt tcc ctt gag gag aga aga aaa							651
Gln Gly Asp Tyr Pro Lys Asp Ile Phe Ser Leu Glu Glu Arg Arg Lys							
74	79		84		89		
ggt gcg atc att ctg cac gtc att gga atg atc tac atg ttc ata gcc							699
Gly Ala Ile Ile Leu His Val Ile Gly Met Ile Tyr Met Phe Ile Ala							
90	95		100		105		
tta gcc att gtc tgt gat gag ttc ttt gtt cct tct ttg act gtc atc							747
Leu Ala Ile Val Cys Asp Glu Phe Phe Val Pro Ser Leu Thr Val Ile							
106	111		116		121		
act gaa aaa ctg ggc atc tct gat gat gtg gct gga gcc acc ttc atg							795
Thr Glu Lys Leu Gly Ile Ser Asp Asp Val Ala Gly Ala Thr Phe Met							
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gct gca gga ggg tca gcc cca gaa ctt ttc aca tct ctc ata ggg gta							843
Ala Ala Gly Gly Ser Ala Pro Glu Leu Phe Thr Ser Leu Ile Gly Val							
138	143		148		153		
ttc atc gct cac agc aac gtt ggc ata ggc aca att gta ggt tca gca							891
Phe Ile Ala His Ser Asn Val Gly Ile Gly Thr Ile Val Gly Ser Ala							
154	159		164		169		
gta ttc aac atc ctc ttt gtt att ggc atg tgt gct ctg ttt tct aga							939

Val Phe Asn Ile Leu Phe Val Ile Gly Met Cys Ala Leu Phe Ser Arg	
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Glu Ile Leu Asn Leu Thr Trp Trp Pro Leu Phe Arg Asp Val Ser Phe	
186 191 196 201	
tac att gtt gac ttg atc atg ctg atc ata ttt ttc ctg gat aat gtc	1035
Tyr Ile Val Asp Leu Ile Met Leu Ile Ile Phe Phe Leu Asp Asn Val	
202 207 212 217	
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Ile Met Trp Trp Glu Ser Leu Leu Leu Leu Thr Ala Tyr Phe Cys Tyr	
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Val Val Phe Met Lys Phe Asn Val Gln Val Glu Lys Trp Val Lys Gln	
234 239 244 249	
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Met Ile Asn Arg Asn Lys Val Val Lys Val Thr Ala Pro Glu Ala Gln	
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Ala Lys Pro Ser Ala Ala Arg Asp Lys Asp Glu Pro Thr Leu Pro Ala	
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Lys Pro Arg Leu Gln Arg Gly Gly Ser Ser Ala Ser Leu His Asn Ser	
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Leu Met Arg Asn Ser Ile Phe Gln Leu Met Ile His Thr Leu Asp Pro	
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Leu Ala Glu Glu Leu Gly Ser Tyr Gly Lys Leu Lys Tyr Tyr Asp Thr	
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Met Thr Glu Glu Gly Arg Phe Arg Glu Lys Ala Ser Ile Leu His Lys	
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Ile Ala Lys Lys Lys Cys His Val Asp Glu Asn Glu Arg Gln Asn Gly	
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Asp Val Glu Met Thr Pro Ser Ser Asp Ala Ser Glu Pro Val Gln Asn	
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Glu Glu Glu Asp Gln Pro Leu Ser Leu Ala Trp Pro Ser Glu Thr Arg				
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Lys Gln Val Thr Phe Leu Ile Val Phe Pro Ile Val Phe Pro Leu Trp				
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Met Val Trp Trp Ala His Gln Val Gly Glu Thr Ile Gly Ile Ser Glu				
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gag att atg ggc ctg acc atc ttg gct gct ggg acc tcc atc cct gat				1899
Glu Ile Met Gly Leu Thr Ile Leu Ala Ala Gly Thr Ser Ile Pro Asp				
490	495	500	505	
ctt atc acc agt gtc ata gtg gcc cgg aag ggg cta ggg gac atg gct				1947
Leu Ile Thr Ser Val Ile Val Ala Arg Lys Gly Leu Gly Asp Met Ala				
506	511	516	521	
gtg tcc agc tct gtt gga agc aac att ttt gac atc act gta ggg ctc				1995
Val Ser Ser Ser Val Gly Ser Asn Ile Phe Asp Ile Thr Val Gly Leu				
522	527	532	537	
cca ctg ccc tgg ctc ctg tac acc gtc att cac aga ttc cag cca gtg				2043
Pro Leu Pro Trp Leu Leu Tyr Thr Val Ile His Arg Phe Gln Pro Val				
538	543	548	553	
gct gtc agc agc aat ggc ctt ttc tgt gcc atc gtc ctt ctc ttc atc				2091
Ala Val Ser Ser Asn Gly Leu Phe Cys Ala Ile Val Leu Leu Phe Ile				
554	559	564	569	
atg ctg ctc ttc gtc atc ctc tct atc gcc ctc tgc aag tgg cga atg				2139
Met Leu Leu Phe Val Ile Leu Ser Ile Ala Leu Cys Lys Trp Arg Met				
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aac aaa atc ctg ggc ttc atc atg ttt ggc ctc tac ttt gtg ttc ctg				2187
Asn Lys Ile Leu Gly Phe Ile Met Phe Gly Leu Tyr Phe Val Phe Leu				
586	591	596	601	
gtg gtg agc gtt ctc cta gaa gac aga att ctt aca tgc ccc gtc tcc				2235
Val Val Ser Val Leu Leu Glu Asp Arg Ile Leu Thr Cys Pro Val Ser				
602	607	612	617	
atc tag caggaaaagc catatcttgc accagcagca tgaatggtcc ctccacactc				2291
Ile *				
618				

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 Met Val  
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 Ile Asp Pro Leu His Val Thr Leu Thr Pro Lys Lys Leu Lys Thr Gly  
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ttc acc atc cgc tgg tat cgc aac acg gag ctg gtg ctg cct gac gag 739  
 Phe Thr Ile Arg Trp Tyr Arg Asn Thr Glu Leu Val Leu Pro Asp Glu  
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gcc atc tcc atc cgc ggg ctc agc aac gag acg ctg ctc atc acc tcg 787

Ala Ile Ser Ile Arg Gly Leu Ser Asn Glu Thr Leu Leu Ile Thr Ser	
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Ala Gln Lys Ser His Ser Gly Ala Tyr Gln Cys Phe Ala Thr Arg Lys	
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Ala Gln Thr Ala Gln Asp Phe Ala Ile Ile Ala Leu Glu Asp Gly Thr	
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Pro Arg Ile Val Ser Ser Phe Ser Glu Lys Val Val Asn Pro Gly Glu	
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Gln Phe Ser Leu Met Cys Ala Ala Lys Gly Ala Pro Pro Pro Thr Val	
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Val Thr Gly Pro Gln Ile Arg Asp Gly Gly Val Tyr Arg Cys Thr Ala	
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Arg Asp Thr Leu Ile Asn Cys Arg Val Ile Gly Tyr Pro Tyr Tyr Ser	
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Met Asp Glu Gly Glu Tyr Leu Cys Ser Val Leu Ile Gln Pro Gln Leu	
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Ser Ile Ser Gln Ser Val His Val Ala Val Lys Val Pro Pro Leu Ile	

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Gln Pro Phe Glu Phe	Pro Pro Ala Ser Ile	Gly Gln Leu Leu Tyr Ile		
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ccc tgt gtg gtg tcc	tcg ggg gac atg ccc	atc cgt atc acc tgg agg		1555
Pro Cys Val Val Ser	Ser Gly Asp Met Pro	Ile Arg Ile Thr Trp Arg		
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Lys Asp Gly Gln Val	Ile Ile Ser Gly Ser	Gly Val Thr Ile Glu Ser		
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Lys Glu Phe Met Ser	Ser Leu Gln Ile Ser	Ser Val Ser Leu Lys His		
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aac ggc aac tat aca	tgc atc gcc agc aac	gca gcc gcc acc gtg agc		1699
Asn Gly Asn Tyr Thr	Cys Ile Ala Ser Asn	Ala Ala Ala Thr Val Ser		
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cgg gag cgc cag ctc	atc gtg cgt gtg ccc	cct cga ttt gtg gtg caa		1747
Arg Glu Arg Gln Leu	Ile Val Arg Val Pro	Pro Arg Phe Val Val Gln		
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ccc aac aac cag gat	ggc atc tac ggc aaa	gct ggt gtg ctc aac tgc		1795
Pro Asn Asn Gln Asp	Gly Ile Tyr Gly Lys	Ala Gly Val Leu Asn Cys		
387	392	397	402	
tcg gtg gac ggc tac	ccc cca ccc aag gtc	atg tgg aag cat gcc aag		1843
Ser Val Asp Gly Tyr	Pro Pro Pro Lys Val	Met Trp Lys His Ala Lys		
403	408	413	418	
ggg agc ggg aac ccc	cag cag tac cac cct	gtg ccc ctc act ggc cgc		1891
Gly Ser Gly Asn Pro	Gln Gln Tyr His Pro	Val Pro Leu Thr Gly Arg		
419	424	429	434	
atc cag atc ctg ccc	aac agc tcg ctg ctg	atc cgc cac gtc cta gaa		1939
Ile Gln Ile Leu Pro	Asn Ser Ser Leu Leu	Ile Arg His Val Leu Glu		
435	440	445	450	
gag gac atc ggc tac	tac ctc tgc cag gcc	agc aac ggc gta ggc acc		1987
Glu Asp Ile Gly Tyr	Tyr Leu Cys Gln Ala	Ser Asn Gly Val Gly Thr		
451	456	461	466	
gac atc agc aag tcc	atg ttc ctc aca gtc	aag atc ccg gcc atg atc		2035
Asp Ile Ser Lys Ser	Met Phe Leu Thr Val	Lys Ile Pro Ala Met Ile		
467	472	477	482	
act tcc cac ccc aac	acc acc atc gcc atc	aag ggc cat gcg aag gag		2083
Thr Ser His Pro Asn	Thr Thr Ile Ala Ile	Lys Gly His Ala Lys Glu		
483	488	493	498	
cta aac tgc acg gca	cgg ggt gag cgg ccc	atc atc atc cgc tgg gag		2131
Leu Asn Cys Thr Ala	Arg Gly Glu Arg Pro	Ile Ile Ile Arg Trp Glu		
499	504	509	514	



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Pro 1075	Asp	Gln	Pro	Arg	Leu	Thr	Val	Ser	Lys	Thr 1085	Ser	Ala	Ser	Ser	Ile 1090	
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Ala	Arg	Leu	Asn	Leu	Gln	Gly	Trp	Asn	Asn	Gly	Gly	Cys	Pro	Ile	Thr	

1187	1192	1197	1202	
gcc atc gtt ctg gag tac cgg ccc aag ggg acc tgg gcc tgg cag ggc				4243
Ala Ile Val Leu Glu Tyr Arg Pro Lys Gly Thr Trp Ala Trp Gln Gly				
1203	1208	1213	1218	
ctc cgg gcc aac agc tcc ggg gag gtg ttt ctg acg gaa ctg cga gag				4291
Leu Arg Ala Asn Ser Ser Gly Glu Val Phe Leu Thr Glu Leu Arg Glu				
1219	1224	1229	1234	
gcc acg tgg tac gag ctg cgc atg agg gct tgc aac agt gcg ggc tgc				4339
Ala Thr Trp Tyr Glu Leu Arg Met Arg Ala Cys Asn Ser Ala Gly Cys				
1235	1240	1245	1250	
ggc aat gaa aca gcc cag ttc gcc acc ctg gac tac gat ggc agc acc				4387
Gly Asn Glu Thr Ala Gln Phe Ala Thr Leu Asp Tyr Asp Gly Ser Thr				
1251	1256	1261	1266	
att cca ccc atc aag tct gct caa ggt gaa ggg gat gat gtg aag aag				4435
Ile Pro Pro Ile Lys Ser Ala Gln Gly Glu Gly Asp Asp Val Lys Lys				
1267	1272	1277	1282	
ctg ttc acc atc ggc tgc cct gtc atc ctg gcc aca ctg ggg gtg gca				4483
Leu Phe Thr Ile Gly Cys Pro Val Ile Leu Ala Thr Leu Gly Val Ala				
1283	1288	1293	1298	
ctg ctc ttc atc gta cgc aag aag agg aag gag aaa cgg ctg aag cga				4531
Leu Leu Phe Ile Val Arg Lys Lys Arg Lys Glu Lys Arg Leu Lys Arg				
1299	1304	1309	1314	
ctc cga gat gca aag agt ttg gca gaa atg ttg ata agc aag aac aat				4579
Leu Arg Asp Ala Lys Ser Leu Ala Glu Met Leu Ile Ser Lys Asn Asn				
1315	1320	1325	1330	
aga agc ttt gac acc cct gtg aaa ggg cca ccc cag ggc cca cgg cta				4627
Arg Ser Phe Asp Thr Pro Val Lys Gly Pro Pro Gln Gly Pro Arg Leu				
1331	1336	1341	1346	
cac att gac atc ccc agg gtc cag ctg ctc atc gag gac aaa gaa ggc				4675
His Ile Asp Ile Pro Arg Val Gln Leu Leu Ile Glu Asp Lys Glu Gly				
1347	1352	1357	1362	
atc aag caa ctg gga gat gac aag gcc acc atc cct gtg aca gat gct				4723
Ile Lys Gln Leu Gly Asp Asp Lys Ala Thr Ile Pro Val Thr Asp Ala				
1363	1368	1373	1378	
gag ttc agc caa gct gtc aac cca cag agc ttc tgt act ggc gtc tcc				4771
Glu Phe Ser Gln Ala Val Asn Pro Gln Ser Phe Cys Thr Gly Val Ser				
1379	1384	1389	1394	
ttg cac cac cca acc ctc atc cag agc aca gga ccc ctc atc gac atg				4819
Leu His His Pro Thr Leu Ile Gln Ser Thr Gly Pro Leu Ile Asp Met				
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tct gac atc cgg cca gga acc aat cca gtg tcc agg aag aat gtg aag				4867
Ser Asp Ile Arg Pro Gly Thr Asn Pro Val Ser Arg Lys Asn Val Lys				
1411	1416	1421	1426	

tca gcc cac agc acc cgg aac cgg tac tca agc cag tgg acc ctg acc	4915
Ser Ala His Ser Thr Arg Asn Arg Tyr Ser Ser Gln Trp Thr Leu Thr	
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aag tgc cag gcc tcc aca cct gcc cgc acc ctc acc tcc gac tgg cgc	4963
Lys Cys Gln Ala Ser Thr Pro Ala Arg Thr Leu Thr Ser Asp Trp Arg	
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acc gtg ggc tcc cag cat ggt gtc acg gtc act gag agt gac agc tac	5011
Thr Val Gly Ser Gln His Gly Val Thr Val Thr Glu Ser Asp Ser Tyr	
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agt gcc agc ctg tcc cag gac aca gac aaa gga agg aac agc atg gtg	5059
Ser Ala Ser Leu Ser Gln Asp Thr Asp Lys Gly Arg Asn Ser Met Val	
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Ser Thr Glu Ser Ala Ser Ser Thr Tyr Glu Glu Leu Ala Arg Ala Tyr	
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gag cat gcc aag ctg gag gag cag ctg cag cac gcc aag ttt gag atc	5155
Glu His Ala Lys Leu Glu Glu Gln Leu Gln His Ala Lys Phe Glu Ile	
1507 1512 1517 1522	
acc gag tgc ttc atc tct gac agt tcc tct gac cag atg acc aca ggc	5203
Thr Glu Cys Phe Ile Ser Asp Ser Ser Ser Asp Gln Met Thr Thr Gly	
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acc aac gag aac gcc gac agc atg aca tcc atg agc aca ccc tca gag	5251
Thr Asn Glu Asn Ala Asp Ser Met Thr Ser Met Ser Thr Pro Ser Glu	
1539 1544 1549 1554	
cct ggc atc tgc cgc ttt acc gcc tca cca ccc aag ccc cag gat gcg	5299
Pro Gly Ile Cys Arg Phe Thr Ala Ser Pro Pro Lys Pro Gln Asp Ala	
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Asp Arg Gly Lys Asn Val Ala Val Pro Ile Pro His Arg Ala Asn Lys	
1571 1576 1581 1586	
agt gac tac tgc aac ctg ccc ctg tat gcc aag tca gag gcc ttc ttt	5395
Ser Asp Tyr Cys Asn Leu Pro Leu Tyr Ala Lys Ser Glu Ala Phe Phe	
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Arg Lys Ala Asp Gly Arg Glu Pro Cys Pro Val Val Pro Pro Arg Glu	
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Ala Ser Ile Arg Asn Leu Ala Arg Thr Tyr His Thr Gln Ala Arg His	
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ctg acc ctg gac cct gcc agc aag tcc ttg ggc ctt ccc cac cca ggg	5539
Leu Thr Leu Asp Pro Ala Ser Lys Ser Leu Gly Leu Pro His Pro Gly	
1635 1640 1645 1650	

Thr Cys Val Ala Ser	Thr Glu Leu Asp Gln Asp Leu Ala Lys Ala Tyr	
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Leu Thr Val Leu Gly	Arg Pro Asp Arg Pro Arg Asp Leu Glu Leu Thr	
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Asp Leu Ala Glu Arg	Ser Val Arg Leu Thr Trp Ile Pro Gly Asp Ala	
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Asn Ser Ala Val Leu	Arg Leu Ser Pro Tyr Val Asn Tyr Gln Phe Arg	
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gtc att gcc atc aac	gag gtt ggg agc agc cac ccc agc ctc cca tcc	2000
Val Ile Ala Ile Asn	Glu Val Gly Ser Ser His Pro Ser Leu Pro Ser	
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Glu Arg Tyr Arg Thr	Ser Gly Ala Pro Pro Glu Ser Asn Pro Gly Asp	
612	617 622 627	
gtg aag gga gag ggg	acc aga aag aac aac atg gag atc acg tgg acg	2096
Val Lys Gly Glu Gly	Thr Arg Lys Asn Asn Met Glu Ile Thr Trp Thr	
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ccc atg aat gcc acc	tcg gcc ttt ggc ccc aac ctg cgc tac att gtc	2144
Pro Met Asn Ala Thr	Ser Ala Phe Gly Pro Asn Leu Arg Tyr Ile Val	
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Trp Gly Ser Arg Tyr	Val Val Gly Gln Thr Pro Val Tyr Val Pro Tyr	
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Glu Ile Arg Val Gln	Ala Glu Asn Asp Phe Gly Lys Gly Pro Glu Pro	
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gag tcc gtc atc ggt	tac tcc gga gaa gat tat ccc agg gct gcg ccc	2336
Glu Ser Val Ile Gly	Tyr Ser Gly Glu Asp Tyr Pro Arg Ala Ala Pro	
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Thr Glu Val Lys Val	Arg Val Met Asn Ser Thr Ala Ile Ser Leu Gln	

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Thr Glu Pro Pro Arg Ala Gly Gly Pro His Thr Lys Met Gly Gly Ser	
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cacgaaacag cagattcttc aacatcgcca aggacccccg ggtgtcc atg agg agg	176
Met Arg Arg	
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agg tct ggg acc ctg gtg att gac ttc cgc agt ggc ggg cgg ccg gag	224
Arg Ser Gly Thr Leu Val Ile Asp Phe Arg Ser Gly Gly Arg Pro Glu	
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Glu Tyr Glu Gly Glu Tyr Gln Cys Phe Ala Arg Asn Lys Phe Gly Thr	
20 25 30 35	
gcc ctg tcc aat agg atc cgc ctg cag gtg tct aaa tct cct ctg tgg	320
Ala Leu Ser Asn Arg Ile Arg Leu Gln Val Ser Lys Ser Pro Leu Trp	
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Thr Leu Gln Cys Asn Pro Pro Pro Gly Leu Pro Ser Pro Val Ile Phe	
68 73 78 83	
tgg atg agc agc tcc atg gag ccc atc acc caa gag aaa cgt gtc tct	464
Trp Met Ser Ser Ser Met Glu Pro Ile Thr Gln Asp Lys Arg Val Ser	
84 89 94 99	
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Gln Gly His Asn Gly Asp Leu Tyr Phe Ser Asn Val Met Leu Gln Asp	
100 105 110 115	
atg cag acc gac tac agt tgt aac gcc cgc ttc cac ttc acc cac acc	560
Met Gln Thr Asp Tyr Ser Cys Asn Ala Arg Phe His Phe Thr His Thr	
116 121 126 131	
atc cag cag aag aac cct ttc acc ctc aag gtc ctc acc acc cga gga	608
Ile Gln Gln Lys Asn Pro Phe Thr Leu Lys Val Leu Thr Thr Arg Gly	
132 137 142 147	
gtt gca gaa aga aca cca agc ttc atg tat ccc cag ggc acc gcg agc	656
Val Ala Glu Arg Thr Pro Ser Phe Met Tyr Pro Gln Gly Thr Ala Ser	
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Ser Gln Met Val Leu Arg Gly Met Asp Leu Leu Leu Glu Cys Ile Ala	
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Ser Gly Val Pro Thr Pro Asp Ile Ala Trp Tyr Lys Lys Gly Gly Asp	
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Leu Pro Ser Asp Lys Ala Lys Phe Glu Asn Phe Asn Lys Ala Leu Arg	
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Ile Thr Asn Val Ser Glu Glu Asp Ser Gly Glu Tyr Phe Cys Leu Ala	
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Ser Asn Lys Met Gly Ser Ile Arg His Thr Ile Ser Val Arg Val Lys	
228 233 238 243	
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Ala Ala Pro Tyr Trp Leu Asp Glu Pro Lys Asn Leu Ile Leu Ala Pro	
244 249 254 259	
ggc gag gat ggg aga ctg gtg tgt cga gcc aat gga aac ccc aaa ccc	992
Gly Glu Asp Gly Arg Leu Val Cys Arg Ala Asn Gly Asn Pro Lys Pro	
260 265 270 275	



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Thr Val Gln Trp Met Val Asn Gly Glu Pro Leu Gln Ser Ala Pro Pro	
276 281 286 291	
aac cca aac cgt gag gtg gcc gga gac acc atc atc ttc cgg gac acc	1088
Asn Pro Asn Arg Glu Val Ala Gly Asp Thr Ile Ile Phe Arg Asp Thr	
292 297 302 307	
cag atc agc agc agg gct gtg tac cag tgc aac acc tcc aac gag cat	1136
Gln Ile Ser Ser Arg Ala Val Tyr Gln Cys Asn Thr Ser Asn Glu His	
308 313 318 323	
ggc tac ctg ctg gcc aac gcc ttt gtc agt gtg ctg gat gtg ccg cct	1184
Gly Tyr Leu Leu Ala Asn Ala Phe Val Ser Val Leu Asp Val Pro Pro	
324 329 334 339	
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Arg Met Leu Ser Pro Arg Asn Gln Leu Ile Arg Val Ile Leu Tyr Asn	
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Arg Thr Arg Leu Asp Cys Pro Phe Phe Gly Ser Pro Ile Pro Thr Leu	
356 361 366 371	
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Arg Trp Phe Lys Asn Gly Gln Gly Ser Asn Leu Asp Gly Gly Asn Tyr	
372 377 382 387	
cat gtt tat gag aac ggc agt ctg gaa att aag atg atc cgc aaa gag	1376
His Val Tyr Glu Asn Gly Ser Leu Glu Ile Lys Met Ile Arg Lys Glu	
388 393 398 403	
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Asp Gln Gly Ile Tyr Thr Cys Val Ala Thr Asn Ile Leu Gly Lys Ala	
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Cys Arg Val Lys His Asp Pro Ser Leu Lys Leu Thr Val Ser Trp Leu	
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Lys Asp Asp Glu Pro Leu Tyr Ile Gly Asn Arg Met Lys Lys Glu Asp	
468 473 478 483	
gat ttc gtg acc atc ttt ggg gtg gca gag cgg gac cag ggc agt tac	1664
Asp Phe Val Thr Ile Phe Gly Val Ala Glu Arg Asp Gln Gly Ser Tyr	
484 489 494 499	
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Trp Asn Arg Val Tyr	Ser Asp Thr Val	Gln Gly Gln Leu Arg	Glu Tyr	
740	745	750	755	
cga gcc tac tac tgg	agg gag agc agc	ttg ctg aag aac	ctg tgg gtg	2480
Arg Ala Tyr Tyr Trp	Arg Glu Ser Ser	Leu Leu Lys Asn	Leu Trp Val	
756	761	766	771	
tct cag aag aga cag	caa gcc agc ttc	cct ggt gac cgc	ctc cgt ggc	2528
Ser Gln Lys Arg Gln	Gln Ala Ser Phe	Pro Gly Asp Arg	Leu Arg Gly	
772	777	782	787	
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Val Val Ser Arg Leu	Phe Pro Tyr Ser	Asn Tyr Lys Leu	Glu Met Val	
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Val Val Asn Gly Arg	Gly Asp Gly Pro	Arg Ser Glu Thr	Lys Glu Phe	
804	809	814	819	
acc acc ccg gaa gga	gta ccc agt gcc	cct agg cgt ttc	cga gtc cgg	2672
Thr Thr Pro Glu Gly	Val Pro Ser Ala	Pro Arg Arg Phe	Arg Val Arg	
820	825	830	835	
cag ccc aac ctg gag	aca atc aac ctg	gaa tgg gat cat	cct gag cat	2720
Gln Pro Asn Leu Glu	Thr Ile Asn Leu	Glu Trp Asp His	Pro Glu His	
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cca aat ggg atc atg	att gga tac act	ctc aaa tat gtg	gcc ttt aac	2768
Pro Asn Gly Ile Met	Ile Gly Tyr Thr	Leu Lys Tyr Val	Ala Phe Asn	
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Gly Thr Lys Val Gly	Lys Gln Ile Val	Glu Asn Phe Ser	Pro Asn Gln	
868	873	878	883	
acc aag ttc acg gtg	caa aga acg gac	ccc gtg tca cgc	tac cgc ttt	2864
Thr Lys Phe Thr Val	Gln Arg Thr Asp	Pro Val Ser Arg	Tyr Arg Phe	
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acc ctc agc gcc agg	acg cag gtg ggc	tct ggg gaa gcc	gtc aca gag	2912
Thr Leu Ser Ala Arg	Thr Gln Val Gly	Ser Gly Glu Ala	Val Thr Glu	
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Glu Ser Pro Ala Pro	Pro Asn Glu Gly	Arg Cys Met Ala	Ala Ala Pro	
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Thr Leu Gln Cys Asn Pro Pro Pro Gly Leu Pro Ser Pro Val Ile Phe	
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Trp Met Ser Ser Ser Met Glu Pro Ile Thr Gln Asp Lys Arg Val Ser	
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Pro Pro Thr Val Thr	Leu Leu Arg Ser Glu	Pro Ala Pro His Leu *	
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 aaaa 14530

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 <222> (151) .. (636)

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 ccaaacccaa aaaaagagat ctctcgagga tcgaattcg cggccgcgtc gacgcgggtg 120  
 ccgcctctaa agagagcaat cactacactt atg gct ggg att ttg cgc tta 171  
 Met Ala Gly Ile Leu Arg Leu  
 1 5  
 gta gtt caa tgg ccc cca ggc aga cta cag acc gtg aca aaa ggt gtg 219  
 Val Val Gln Trp Pro Pro Gly Arg Leu Gln Thr Val Thr Lys Gly Val  
 8 13 18 23  
 gag tct ctt att tgt aca gat tgg att cgt cac aaa ttc acc aga tca 267  
 Glu Ser Leu Ile Cys Thr Asp Trp Ile Arg His Lys Phe Thr Arg Ser  
 24 29 34 39  
 aga att cca gaa aaa gtg ttt cag gcc tca cct gaa gat cat gaa aaa 315  
 Arg Ile Pro Glu Lys Val Phe Gln Ala Ser Pro Glu Asp His Glu Lys  
 40 45 50 55  
 tac ggt ggg gat cca cag aac cct cat aaa ctg cat att gtt acc aga 363  
 Tyr Gly Gly Asp Pro Gln Asn Pro His Lys Leu His Ile Val Thr Arg

56	61	66	71	
ata aaa agt aca aga aga cgt cca tat tgg gaa aaa gat ata ata aag				411
Ile Lys Ser Thr Arg Arg Arg Pro Tyr Trp Glu Lys Asp Ile Ile Lys				
72	77	82	87	
atg ctt gga tta gaa aaa gca cat acc cct caa gtt cac aag aat atc				459
Met Leu Gly Leu Glu Lys Ala His Thr Pro Gln Val His Lys Asn Ile				
88	93	98	103	
cct tca gtg aat gca aaa ttg aaa gta gtt aag cat ttg ata aga atc				507
Pro Ser Val Asn Ala Lys Leu Lys Val Val Lys His Leu Ile Arg Ile				
104	109	114	119	
aag ccc ttg aag ttg cca caa gga ctt cca aca gag gag aac atg tct				555
Lys Pro Leu Lys Leu Pro Gln Gly Leu Pro Thr Glu Glu Asn Met Ser				
120	125	130	135	
aac acg tgc ctc aaa agc act ggg gag tta gta gtg cag tgg cat ctg				603
Asn Thr Cys Leu Lys Ser Thr Gly Glu Leu Val Val Gln Trp His Leu				
136	141	146	151	
aaa cct gtg gag cag aaa gca cat gag tcc taa tgccccag cagcttccga				654
Lys Pro Val Glu Gln Lys Ala His Glu Ser *				
152	157	162		
ttggaaaatg caaattgttt ttatttaaag atgatacctg gaggggtggg gagaagtaag				714
aattgtaagg gaggttcagt agtggggaat tctgtgacag ctgattgaag atgatgatga				774
agaacctctg cattctagtt accctttgct tcccttcacc tcttgtaaaa tttggcttgg				834
caacaatgac attgtcatgc ttattgtccc aatatccatc ctgtcgtaga tcttaatggt				894
tttgatcggt gcgttaaagt ggaagtgcc cccacagtga aaccagatcc cattaataaa				954
taagcttaaa ggcaaaaaaa aaaaa				979

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Met Pro Glu Glu Lys Asp Cys Gly Gly Gly Asp Ala	
1 5 10	

ctc tcc aat ggc atc aag aaa cac aga aca agt ttg cct tct cct atg	157
Leu Ser Asn Gly Ile Lys Lys His Arg Thr Ser Leu Pro Ser Pro Met	
13 18 23 28	
ttt tcc aga aat gac ttc agt atc tgg agc atc ctc aga aaa tgt att	205
Phe Ser Arg Asn Asp Phe Ser Ile Trp Ser Ile Leu Arg Lys Cys Ile	
29 34 39 44	
gga atg gaa cta tcc aag atc acg atg cca gtt ata ttt aat gag cct	253
Gly Met Glu Leu Ser Lys Ile Thr Met Pro Val Ile Phe Asn Glu Pro	
45 50 55 60	
ctg agc ttc cta cag cgc cta act gaa tac atg gag cat act tac ctc	301
Leu Ser Phe Leu Gln Arg Leu Thr Glu Tyr Met Glu His Thr Tyr Leu	
61 66 71 76	
atc cac aag gcc agt tca ctc tct gat cct gtg gaa agg atg cag tgt	349
Ile His Lys Ala Ser Ser Leu Ser Asp Pro Val Glu Arg Met Gln Cys	
77 82 87 92	
gta gct gcg ttt gct gta tct gct gtt gct tct cag tgg gaa cgg act	397
Val Ala Ala Phe Ala Val Ser Ala Val Ala Ser Gln Trp Glu Arg Thr	
93 98 103 108	
gga aaa cct ttc aac cca ctg ctg gga gag act tat gaa tta gtg cga	445
Gly Lys Pro Phe Asn Pro Leu Leu Gly Glu Thr Tyr Glu Leu Val Arg	
109 114 119 124	
gat gac ctt gga ttt aga ctc atc tcc gaa cag gtc agc cat cac cca	493
Asp Asp Leu Gly Phe Arg Leu Ile Ser Glu Gln Val Ser His His Pro	
125 130 135 140	
cca atc agt gca ttt cat gct gaa gga tta aac aat gac ttc atc ttt	541
Pro Ile Ser Ala Phe His Ala Glu Gly Leu Asn Asn Asp Phe Ile Phe	
141 146 151 156	
cat ggc tct atc tat ccc aaa ctg aaa ttc tgg ggg aag agt gta gaa	589
His Gly Ser Ile Tyr Pro Lys Leu Lys Phe Trp Gly Lys Ser Val Glu	
157 162 167 172	
gca gaa ccc aaa gga acc atc acc ttg gag ctc ctt gaa cac aat gag	637
Ala Glu Pro Lys Gly Thr Ile Thr Leu Glu Leu Leu Glu His Asn Glu	
173 178 183 188	
gca tat aca tgg aca aat ccc acc tgc tgt gtg cat aat atc att gtg	685
Ala Tyr Thr Trp Thr Asn Pro Thr Cys Cys Val His Asn Ile Ile Val	
189 194 199 204	
ggg aaa ctg tgg atc gaa cag tat ggc aat gtg gaa att ata aac cac	733
Gly Lys Leu Trp Ile Glu Gln Tyr Gly Asn Val Glu Ile Ile Asn His	
205 210 215 220	
aag act ggg gac aaa tgt gtg ttg aat ttt aag cca tgt ggc ctt ttt	781
Lys Thr Gly Asp Lys Cys Val Leu Asn Phe Lys Pro Cys Gly Leu Phe	
221 226 231 236	
ggg aag gaa tta cac aaa gtt gaa ggc tac att caa gat aaa agc aaa	829

Gly Lys Glu Leu His Lys Val Glu Gly Tyr Ile Gln Asp Lys Ser Lys	
237 242 247 252	
aag aag ctc tgt gcc ctc tat ggg aag tgg act gaa tgt tta tac agt	877
Lys Lys Leu Cys Ala Leu Tyr Gly Lys Trp Thr Glu Cys Leu Tyr Ser	
253 258 263 268	
gtt gac cct gcc acg ttt gac gct tac aaa aaa aat gat aag aaa aat	925
Val Asp Pro Ala Thr Phe Asp Ala Tyr Lys Lys Asn Asp Lys Lys Asn	
269 274 279 284	
aca gaa gag aag aag aac agc aaa cag atg agc acc tct gag gag ttg	973
Thr Glu Glu Lys Lys Asn Ser Lys Gln Met Ser Thr Ser Glu Glu Leu	
285 290 295 300	
gat gaa atg cca gtg ccg gat tct gaa agt gta ttc att atc cct gga	1021
Asp Glu Met Pro Val Pro Asp Ser Glu Ser Val Phe Ile Ile Pro Gly	
301 306 311 316	
agc gtt ctt cta tgg cga ata gcc cca cgg cct cca aat tct gcc cag	1069
Ser Val Leu Leu Trp Arg Ile Ala Pro Arg Pro Pro Asn Ser Ala Gln	
317 322 327 332	
atg tat aat ttt act agt ttt gca atg gtt ttg aat gaa gta gac aaa	1117
Met Tyr Asn Phe Thr Ser Phe Ala Met Val Leu Asn Glu Val Asp Lys	
333 338 343 348	
gac atg gag agt gtg att ccc aag aca gac tgc agg tta cgg cct gac	1165
Asp Met Glu Ser Val Ile Pro Lys Thr Asp Cys Arg Leu Arg Pro Asp	
349 354 359 364	
atc aga gcc atg gaa aat gga gag ata gat caa gct agt gaa gaa aaa	1213
Ile Arg Ala Met Glu Asn Gly Glu Ile Asp Gln Ala Ser Glu Glu Lys	
365 370 375 380	
aaa cga ctt gag gaa aaa caa aga gca gcc cgc aaa aac agg tcc aag	1261
Lys Arg Leu Glu Glu Lys Gln Arg Ala Ala Arg Lys Asn Arg Ser Lys	
381 386 391 396	
tca gaa gag gac tgg aag acg agg tgg ttc cat caa ggt cct aat ccc	1309
Ser Glu Glu Asp Trp Lys Thr Arg Trp Phe His Gln Gly Pro Asn Pro	
397 402 407 412	
tac aat gga gca cag gac tgg att tac tct ggc agc tac tgg gac aga	1357
Tyr Asn Gly Ala Gln Asp Trp Ile Tyr Ser Gly Ser Tyr Trp Asp Arg	
413 418 423 428	
aat tac ttc aat ttg cct gac att tat taa a atgcatacaa gtcagggtgt	1408
Asn Tyr Phe Asn Leu Pro Asp Ile Tyr *	
429 434	
ttggctaatac tacaaataag tcttaaact atgttttttaa atttttttcc cttggtttct	1468
acttatcttt taaaaaaaaa aatgaaaaaa cactcatgag ataactgcat ttcacccaac	1528
aaaagcaggg tataaggcga tattggtgat gaaagtctta ggaaaaatgc ataattttgc	1588

tataaaatgt acttatttgg aatactatatt tatatagagg taagagaaca ctgctgggga 1648  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 1 5 10

tcc ctt agt cga atc aag agc aac gtg gat ggg cgg tac ctg gtg gac 96  
 Ser Leu Ser Arg Ile Lys Ser Asn Val Asp Gly Arg Tyr Leu Val Asp  
 17 22 27 32

ggc gtc cct ttc agc tgc tgc aat cct agc tcg cca cgg ccc tgc atc 144  
 Gly Val Pro Phe Ser Cys Cys Asn Pro Ser Ser Pro Arg Pro Cys Ile  
 33 38 43 48

cag tat cag atc acc aac aac tca gca cac tac agt tac gac cac cag 192  
 Gln Tyr Gln Ile Thr Asn Asn Ser Ala His Tyr Ser Tyr Asp His Gln  
 49 54 59 64

acg gag gag ctc aac ctg tgg gtg cgt ggc tgc agg gct gcc ctg ctg 240  
 Thr Glu Glu Leu Asn Leu Trp Val Arg Gly Cys Arg Ala Ala Leu Leu  
 65 70 75 80

agc tac tac agc agc ctc atg aac tcc atg ggt gtc gtc acg ctc ctc 288  
 Ser Tyr Tyr Ser Ser Leu Met Asn Ser Met Gly Val Val Thr Leu Leu  
 81 86 91 96

att tgg ctc ttc gag gtg acc att aca att ggg ctg cgc tac cta cag 336  
 Ile Trp Leu Phe Glu Val Thr Ile Thr Ile Gly Leu Arg Tyr Leu Gln  
 97 102 107 112

acg tcg ctg gat ggt gtg tcc aac ccc gag gaa tct gag agc gag agc 384  
 Thr Ser Leu Asp Gly Val Ser Asn Pro Glu Glu Ser Glu Ser Glu Ser  
 113 118 123 128

gag ggc tgg ctg ctg gag aag agc gtg ccg gag acc tgg aag gcc ttt 432  
 Glu Gly Trp Leu Leu Glu Lys Ser Val Pro Glu Thr Trp Lys Ala Phe  
 129 134 139 144

ctg gag agt gtg aag aag ctg ggc aag ggc aac cag gtg act gtg gct 480  
 Leu Glu Ser Val Lys Lys Leu Gly Lys Gly Asn Gln Val Thr Val Ala  
 145 150 155 160



att aac aaa aac atc agc tct gac cct ttg cca aga gca gtg gac aat	528
Ile Asn Lys Asn Ile Ser Ser Asp Pro Leu Pro Arg Ala Val Asp Asn	
161 166 171 176	
gaa ttt gag aca gtt gcc act cag ctc cta aaa agg acc caa gct atg	576
Glu Phe Glu Thr Val Ala Thr Gln Leu Leu Lys Arg Thr Gln Ala Met	
177 182 187 192	
ctt aac aaa tac aga tgc ctg ctc cta gaa gat gcc atg cga atc aat	624
Leu Asn Lys Tyr Arg Cys Leu Leu Leu Glu Asp Ala Met Arg Ile Asn	
193 198 203 208	
ccc tct gct gag atg gtg atg atc gat agg atg ttc aac cag gag gaa	672
Pro Ser Ala Glu Met Val Met Ile Asp Arg Met Phe Asn Gln Glu Glu	
209 214 219 224	
aga gct tcc ctg tcc cga gac aag cgt ttg gca ctt gta gac cct gag	720
Arg Ala Ser Leu Ser Arg Asp Lys Arg Leu Ala Leu Val Asp Pro Glu	
225 230 235 240	
ggg ttt cag gct gat ttc tgt tgt tcc ttc aaa ctt gat aaa gct gct	768
Gly Phe Gln Ala Asp Phe Cys Cys Ser Phe Lys Leu Asp Lys Ala Ala	
241 246 251 256	
cat gag aca cag ttt ggc cgg agt gac cag cat ggc agt aaa gca agc	816
His Glu Thr Gln Phe Gly Arg Ser Asp Gln His Gly Ser Lys Ala Ser	
257 262 267 272	
agc tct ctg caa ccg cca gcc aag gcc caa ggc aga gac cga gcc aaa	864
Ser Ser Leu Gln Pro Pro Ala Lys Ala Gln Gly Arg Asp Arg Ala Lys	
273 278 283 288	
acc ggt gtg acg gaa ccc atg aat cat gac cag ttt cat cta gtg cct	912
Thr Gly Val Thr Glu Pro Met Asn His Asp Gln Phe His Leu Val Pro	
289 294 299 304	
aat cac atc gtg gtc tct gca gaa gga aac att tct aaa aaa aca gaa	960
Asn His Ile Val Val Ser Ala Glu Gly Asn Ile Ser Lys Lys Thr Glu	
305 310 315 320	
tgc ctt ggc aga gca ctg aaa ttt gac aaa gtg ggc tta gtg cag tac	1008
Cys Leu Gly Arg Ala Leu Lys Phe Asp Lys Val Gly Leu Val Gln Tyr	
321 326 331 336	
cag agc acg tct gaa gag aag gcc agc cgg aga gag cct ctg aag gcc	1056
Gln Ser Thr Ser Glu Glu Lys Ala Ser Arg Arg Glu Pro Leu Lys Ala	
337 342 347 352	
agt cag tgc tct ccc ggc cct gag ggg cac cgg aaa acc tca tcc aga	1104
Ser Gln Cys Ser Pro Gly Pro Glu Gly His Arg Lys Thr Ser Ser Arg	
353 358 363 368	
tgc gat cat ggt act gag agc aaa ctg tca agc atc cta gca gat tgc	1152
Ser Asp His Gly Thr Glu Ser Lys Leu Ser Ser Ile Leu Ala Asp Ser	
369 374 379 384	
cac ttg gag atg acg tgt aac aat tcc ttc cag gac aaa agt ctg agg	1200

His	Leu	Glu	Met	Thr	Cys	Asn	Asn	Ser	Phe	Gln	Asp	Lys	Ser	Leu	Arg	
385					390					395					400	
aat	tct	cca	aag	aat	gaa	gtt	tta	cac	aca	gac	atc	atg	aaa	ggg	tca	1248
Asn	Ser	Pro	Lys	Asn	Glu	Val	Leu	His	Thr	Asp	Ile	Met	Lys	Gly	Ser	
401					406					411					416	
ggc	gaa	ccc	cag	cca	gat	ctc	cag	ctg	aca	aag	agc	ttg	gaa	acc	aca	1296
Gly	Glu	Pro	Gln	Pro	Asp	Leu	Gln	Leu	Thr	Lys	Ser	Leu	Glu	Thr	Thr	
417					422					427					432	
ttt	aag	aac	atc	ttg	gaa	ctc	aaa	aag	gcg	gga	cgg	cag	ccc	cag	agt	1344
Phe	Lys	Asn	Ile	Leu	Glu	Leu	Lys	Lys	Ala	Gly	Arg	Gln	Pro	Gln	Ser	
433					438					443					448	
gac	ccc	acg	gtt	agc	ggc	tct	gtt	gag	tta	gat	ttc	ccc	aac	ttt	tct	1392
Asp	Pro	Thr	Val	Ser	Gly	Ser	Val	Glu	Leu	Asp	Phe	Pro	Asn	Phe	Ser	
449					454					459					464	
cct	atg	gct	tca	cag	gaa	aac	tgc	ctg	gaa	aag	ttc	atc	ccg	gac	cac	1440
Pro	Met	Ala	Ser	Gln	Glu	Asn	Cys	Leu	Glu	Lys	Phe	Ile	Pro	Asp	His	
465					470					475					480	
agt	gac	gtt	gtc	atg	gat	gat	gat	gat	gac	tcg	tgt	ctc	ott	gat	ott	1488
Ser	Asp	Val	Val	Met	Asp	Asp	Asp	Asp	Asp	Ser	Cys	Leu	Leu	Asp	Leu	
481					486					491					496	
att	gga	gac	cca	caa	gca	ttg	aac	tat	ttt	cta	cat	gga	cct	agt	aat	1536
Ile	Gly	Asp	Pro	Gln	Ala	Leu	Asn	Tyr	Phe	Leu	His	Gly	Pro	Ser	Asn	
497					502					507					512	
aaa	tct	agc	aat	gat	gac	ttg	act	aat	gca	gga	tat	tct	gca	gcc	aat	1584
Lys	Ser	Ser	Asn	Asp	Asp	Leu	Thr	Asn	Ala	Gly	Tyr	Ser	Ala	Ala	Asn	
513					518					523					528	
tca	aat	tca	att	ttc	gcc	aac	tct	agt	aat	gct	gat	cct	aag	tca	tcc	1632
Ser	Asn	Ser	Ile	Phe	Ala	Asn	Ser	Ser	Asn	Ala	Asp	Pro	Lys	Ser	Ser	
529					534					539					544	
ctc	aaa	ggt	gta	agc	aac	cag	ctt	gga	gaa	ggg	ccc	agt	gat	gga	ctg	1680
Leu	Lys	Gly	Val	Ser	Asn	Gln	Leu	Gly	Glu	Gly	Pro	Ser	Asp	Gly	Leu	
545					550					555					560	
cca	ctt	tca	agt	agc	ctc	cag	ttt	ctt	gaa	gat	gaa	ctc	gag	tct	tct	1728
Pro	Leu	Ser	Ser	Ser	Leu	Gln	Phe	Leu	Glu	Asp	Glu	Leu	Glu	Ser	Ser	
561					566					571					576	
cct	ctt	cct	gat	ctc	act	gag	gac	caa	cct	ttc	gac	att	ctt	cag	aaa	1776
Pro	Leu	Pro	Asp	Leu	Thr	Glu	Asp	Gln	Pro	Phe	Asp	Ile	Leu	Gln	Lys	
577					582					587					592	
tcc	ttg	caa	gag	gcc	aat	atc	act	gaa	cag	aca	ttg	gca	gaa	gag	gca	1824
Ser	Leu	Gln	Glu	Ala	Asn	Ile	Thr	Glu	Gln	Thr	Leu	Ala	Glu	Glu	Ala	
593					598					603					608	
tat	ttg	gat	gcc	agt	ata	ggt	tca	agc	caa	cag	ttt	gca	caa	gct	cag	1872
Tyr	Leu	Asp	Ala	Ser	Ile	Gly	Ser	Ser	Gln	Gln	Phe	Ala	Gln	Ala	Gln	

609	614	619	624	
ctt cat cct tct tca tca gca tcc ttt act cag gct tct aat gtt tct				1920
Leu His Pro Ser Ser Ser Ala Ser Phe Thr Gln Ala Ser Asn Val Ser				
625	630	635	640	
aat tac tca ggt cag acg ctg cag cct ata ggg gtg acg cat gtg cct				1968
Asn Tyr Ser Gly Gln Thr Leu Gln Pro Ile Gly Val Thr His Val Pro				
641	646	651	656	
gtt gga gca tcg ttt gca agc aat aca gtg ggt gta caa cat ggc ttt				2016
Val Gly Ala Ser Phe Ala Ser Asn Thr Val Gly Val Gln His Gly Phe				
657	662	667	672	
atg caa cat gtg ggg atc agt gtt ccc agc cag cat ttg tct aat agc				2064
Met Gln His Val Gly Ile Ser Val Pro Ser Gln His Leu Ser Asn Ser				
673	678	683	688	
agt cag att agt ggt tct ggt caa ata cag tta att ggg tca ttt ggt				2112
Ser Gln Ile Ser Gly Ser Gly Gln Ile Gln Leu Ile Gly Ser Phe Gly				
689	694	699	704	
aat cat cct tcc atg atg act att aat aac cta gat gga tct caa atc				2160
Asn His Pro Ser Met Met Thr Ile Asn Asn Leu Asp Gly Ser Gln Ile				
705	710	715	720	
ata tta aag ggc agc ggg cag caa gcc cca tca aat gtg agt gga ggg				2208
Ile Leu Lys Gly Ser Gly Gln Gln Ala Pro Ser Asn Val Ser Gly Gly				
721	726	731	736	
ctc ctg gtt cat aga cag act cct aat ggc aac tcc ttg ttt ggg aac				2256
Leu Leu Val His Arg Gln Thr Pro Asn Gly Asn Ser Leu Phe Gly Asn				
737	742	747	752	
tct agt tcc agt cca gta gca cag cct gtt acc gtt cca ttt aac agc				2304
Ser Ser Ser Ser Pro Val Ala Gln Pro Val Thr Val Pro Phe Asn Ser				
753	758	763	768	
aca aat ttt caa aca tct tta cct gtg cat aac atc atc ata caa agg				2352
Thr Asn Phe Gln Thr Ser Leu Pro Val His Asn Ile Ile Ile Gln Arg				
769	774	779	784	
ggg ctt gca cca aat tca aat aaa gtc cca att aat ata cag cca aag				2400
Gly Leu Ala Pro Asn Ser Asn Lys Val Pro Ile Asn Ile Gln Pro Lys				
785	790	795	800	
cct atc cag atg ggt cag caa aat aca tac aat gtg aac aat ttg gga				2448
Pro Ile Gln Met Gly Gln Gln Asn Thr Tyr Asn Val Asn Asn Leu Gly				
801	806	811	816	
att cag cag cac cac gta caa caa ggg atc tct ttt gct tct gca agc				2496
Ile Gln Gln His His Val Gln Gln Gly Ile Ser Phe Ala Ser Ala Ser				
817	822	827	832	
tca ccc cag ggc tca gta gtt ggt cca cac atg tct gtg aac att gta				2544
Ser Pro Gln Gly Ser Val Val Gly Pro His Met Ser Val Asn Ile Val				
833	838	843	848	

aac caa cag aac aca aga aag cca gtc acc tca cag gca gtg agc agc	2592
Asn Gln Gln Asn Thr Arg Lys Pro Val Thr Ser Gln Ala Val Ser Ser	
849 854 859 864	
act ggg ggc agt att gtt att cat tcc ccc atg ggc caa cct cac gca	2640
Thr Gly Gly Ser Ile Val Ile His Ser Pro Met Gly Gln Pro His Ala	
865 870 875 880	
ccc caa agt cag ttc ctt ata cct aca agc ctt tct gtc agt tcc aac	2688
Pro Gln Ser Gln Phe Leu Ile Pro Thr Ser Leu Ser Val Ser Ser Asn	
881 886 891 896	
tcg gta cac cac gtc cag act ata aat ggg caa ctt ctt caa act caa	2736
Ser Val His His Val Gln Thr Ile Asn Gly Gln Leu Leu Gln Thr Gln	
897 902 907 912	
ccc tct cag ctc att tct ggc caa gtg gcc tca gag cat gtc atg ttg	2784
Pro Ser Gln Leu Ile Ser Gly Gln Val Ala Ser Glu His Val Met Leu	
913 918 923 928	
aac aga aac tct tcc aac atg ctc agg acc aac caa cca tat act gga	2832
Asn Arg Asn Ser Ser Asn Met Leu Arg Thr Asn Gln Pro Tyr Thr Gly	
929 934 939 944	
ccg atg ctt aac aac cag aat act gct gtc cac tta gtg tct ggg cag	2880
Pro Met Leu Asn Asn Gln Asn Thr Ala Val His Leu Val Ser Gly Gln	
945 950 955 960	
aca ttt gct gcc tct gga agt cca gtg ata gcc aat cat gcc tct cct	2928
Thr Phe Ala Ala Ser Gly Ser Pro Val Ile Ala Asn His Ala Ser Pro	
961 966 971 976	
cag ctt gtg ggt gga cag atg ccc ttg cag cag gca tcc cca act gta	2976
Gln Leu Val Gly Gly Gln Met Pro Leu Gln Gln Ala Ser Pro Thr Val	
977 982 987 992	
tta cac ctg tca cct ggg cag agc agc gtt tcc caa gga aga cct ggc	3024
Leu His Leu Ser Pro Gly Gln Ser Ser Val Ser Gln Gly Arg Pro Gly	
993 998 1003 1008	
ttc gcc acc atg cca tcg gtg aca agc atg tca gga cct agt cgg ttc	3072
Phe Ala Thr Met Pro Ser Val Thr Ser Met Ser Gly Pro Ser Arg Phe	
1009 1014 1019 1024	
cct gct gtc agc tca gcc agc act gcc cat cct agt ctt ggg tct gca	3120
Pro Ala Val Ser Ser Ala Ser Thr Ala His Pro Ser Leu Gly Ser Ala	
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Lys Arg Thr Gln Ala Met Leu Asn Lys Tyr Arg Cys Leu Leu Leu Glu	
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Val Tyr Gly Ser Leu Val Leu Thr Leu Phe Ala Pro Gln Pro Leu Leu	
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Phe Leu Ala Val Ser Ser Val Leu Leu Ala Gly Gly Leu Gly Leu Phe	
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 Tyr Arg Gln Gln Leu Arg Arg Ala Arg Asn Arg Tyr Pro Lys Gly His  
 93 98 103 108  
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Gln	Leu	Ala	Val	Ala	Val	Asp	Pro	Ser	Asp	Pro	Arg	Ala	Val	Gln	Ala	
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Trp	Val	Gln	Arg	Gln	Arg	Leu	Glu	Arg	Lys	Gly	Thr	Cys	Pro	Ser	Thr	
317					322					327					332	
ctg	gga	gag	gag	cgc	tcc	tac	aac	ccg	ttc	ctg	aga	acc	cac	tgc	ctg	1058
Leu	Gly	Glu	Glu	Arg	Ser	Tyr	Asn	Pro	Phe	Leu	Arg	Thr	His	Cys	Leu	

333	338	343	348	
gcg cta cag gag gct	ctg ggg ccg ggg ccg ggc	ccc act ggg gat	gat	1106
Ala Leu Gln Glu Ala	Leu Gly Pro Gly Pro	Gly Pro Thr Gly Asp	Asp	
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gac tac tcc cgg gcc	cag ctc ctg gaa gag	ctc cgc cgg ctg	aag gat	1154
Asp Tyr Ser Arg Ala	Gln Leu Leu Glu Glu	Leu Arg Arg Leu	Lys Asp	
365	370	375	380	
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Met His Lys Ser Lys	*			
381	386			
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agttaga 2595

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ttgggctgag cagaggacga c atg ttg ctt ttc gtg gag cag gta gca tct 171  
Met Leu Leu Phe Val Glu Gln Val Ala Ser  
1 5  
aaa gga act ggt tta aat cct aat gcc aaa gta tgg caa gaa att gct 219  
Lys Gly Thr Gly Leu Asn Pro Asn Ala Lys Val Trp Gln Glu Ile Ala  
11 16 21 26  
cct gga aat act gat gcc acc cca gta act cat gga act gaa agc tct 267  
Pro Gly Asn Thr Asp Ala Thr Pro Val Thr His Gly Thr Glu Ser Ser  
27 32 37 42  
tgg cat gaa ata gca gct aca tca ggt gct cat cct gag ggt aat gca 315  
Trp His Glu Ile Ala Ala Thr Ser Gly Ala His Pro Glu Gly Asn Ala  
43 48 53 58  
gag ctc tca gaa gat ata tgt aaa gaa tat gaa gta atg tat tct tca 363  
Glu Leu Ser Glu Asp Ile Cys Lys Glu Tyr Glu Val Met Tyr Ser Ser  
59 64 69 74  
tct tgt gaa acc aca aga aat act aca ggc att gaa gaa tca act gat 411  
Ser Cys Glu Thr Thr Arg Asn Thr Thr Gly Ile Glu Glu Ser Thr Asp  
75 80 85 90  
ggg atg att tta gga cca gaa gat ctg agt tac caa ata tat gat gtt 459  
Gly Met Ile Leu Gly Pro Glu Asp Leu Ser Tyr Gln Ile Tyr Asp Val  
91 96 101 106  
tcc gga gaa agc aat tca gca gtt tct aca gaa gac cta aaa gaa tgt 507  
Ser Gly Glu Ser Asn Ser Ala Val Ser Thr Glu Asp Leu Lys Glu Cys  
107 112 117 122  
ctg aag aaa caa tta gaa ttc tgt ttt tca cga gaa aat ttt tca aag 555  
Leu Lys Lys Gln Leu Glu Phe Cys Phe Ser Arg Glu Asn Phe Ser Lys  
123 128 133 138

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Asp	Leu	Tyr	Leu	Ile	Ser	Gln	Met	Asp	Ser	Asp	Gln	Phe	Ile	Pro	Ile	
139					144					149					154	
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Trp	Thr	Val	Ala	Asn	Met	Glu	Glu	Ile	Lys	Lys	Leu	Thr	Thr	Asp	Pro	
155					160					165					170	
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Asp	Leu	Ile	Leu	Glu	Val	Leu	Arg	Ser	Ser	Pro	Met	Val	Gln	Val	Asp	
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187					192					197					202	
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Leu	Arg	Glu	Ile	Pro	Glu	Thr	Thr	Pro	Ile	Glu	Glu	Val	Lys	Gly	Leu	
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Phe	Lys	Ser	Glu	Asn	Cys	Pro	Lys	Val	Ile	Ser	Cys	Glu	Phe	Ala	His	
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Asn	Ser	Asn	Trp	Tyr	Ile	Thr	Phe	Gln	Ser	Asp	Thr	Asp	Ala	Gln	Gln	
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Ala	Phe	Lys	Tyr	Leu	Arg	Glu	Glu	Val	Lys	Thr	Phe	Gln	Gly	Lys	Pro	
251					256					261					266	
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Ile	Met	Ala	Arg	Ile	Lys	Ala	Ile	Asn	Thr	Phe	Phe	Ala	Lys	Asn	Gly	
267					272					277					282	
tat	cga	tta	atg	gat	tct	agt	atc	tat	agt	cac	ccc	att	caa	act	caa	1035
Tyr	Arg	Leu	Met	Asp	Ser	Ser	Ile	Tyr	Ser	His	Pro	Ile	Gln	Thr	Gln	
283					288					293					298	
gca	cag	tat	gcc	tcc	cca	gtc	ttt	atg	cag	cct	gta	tat	aat	cct	cac	1083
Ala	Gln	Tyr	Ala	Ser	Pro	Val	Phe	Met	Gln	Pro	Val	Tyr	Asn	Pro	His	
299					304					309					314	
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Gln	Gln	Tyr	Ser	Val	Tyr	Ser	Ile	Val	Pro	Gln	Ser	Trp	Ser	Pro	Asn	
315					320					325					330	
cct	aca	cct	tac	ttt	gaa	aca	cca	ctg	gct	ccc	ttt	ccc	aat	ggt	agt	1179
Pro	Thr	Pro	Tyr	Phe	Glu	Thr	Pro	Leu	Ala	Pro	Phe	Pro	Asn	Gly	Ser	
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Phe	Val	Asn	Gly	Phe	Asn	Ser	Pro	Gly	Ser	Tyr	Lys	Thr	Asn	Ala	Ala	
347					352					357					362	

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363 368 373 378

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Phe Arg Ser Ser Gly Gly Ser Glu His Ser Thr Glu Gly Ser Val Ser  
379 384 389 394

ttg ggg gat gga cag ttg aac aga tat agt tca aga aac ttt cca gct 1371  
Leu Gly Asp Gly Gln Leu Asn Arg Tyr Ser Ser Arg Asn Phe Pro Ala  
395 400 405 410

gaa cgg cat aac ccc aca gta act ggg cat cag gag caa act tac ctt 1419  
Glu Arg His Asn Pro Thr Val Thr Gly His Gln Glu Gln Thr Tyr Leu  
411 416 421 426

cag aag gag act tcc act ttg cag gtg gaa cag aat ggg gac tat ggt 1467  
Gln Lys Glu Thr Ser Thr Leu Gln Val Glu Gln Asn Gly Asp Tyr Gly  
427 432 437 442

agg ggc agg taa gaa aataaagtac ctgaaaacct ttgataataa tgtgatcatc 1522  
Arg Gly Arg \*  
443

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ctgaccgcaa cccctacccc cgcccaccag c atg gcc cgg cac gtg ttc cta 172  
Met Ala Arg His Val Phe Leu  
1 5

acg ggg ccc cca gga gtt gga aaa aca aca ttg atc cat aaa gcc agt 220  
Thr Gly Pro Pro Gly Val Gly Lys Thr Thr Leu Ile His Lys Ala Ser  
8 13 18 23

gag gtt tta aaa tcc tct ggt gtg cct gtt gat gga ttt tat acc gaa 268  
Glu Val Leu Lys Ser Ser Gly Val Pro Val Asp Gly Phe Tyr Thr Glu  
24 29 34 39



gaa gtc aga cag gga ggg aga aga ata gga ttc gat gtc gtc acg ttg 316  
 Glu Val Arg Gln Gly Gly Arg Arg Ile Gly Phe Asp Val Val Thr Leu  
 40 45 50 55

tcc ggc acc cgg ggg cct tta tcg aga gtt ggg tta gag cct cca cct 364  
 Ser Gly Thr Arg Gly Pro Leu Ser Arg Val Gly Leu Glu Pro Pro Pro  
 56 61 66 71

gga aaa cgt gaa tgc cga gtt ggg cag tat gtg gtc gac ctg act tct 412  
 Gly Lys Arg Glu Cys Arg Val Gly Gln Tyr Val Val Asp Leu Thr Ser  
 72 77 82 87

ttt gag cag ttg gca cta ccc gtc ttg agg aat gcc gac tgc agc agt 460  
 Phe Glu Gln Leu Ala Leu Pro Val Leu Arg Asn Ala Asp Cys Ser Ser  
 88 93 98 103

ggc cca ggg caa aga gtg tgc gtc atc gat gag att ggg aag atg gag 508  
 Gly Pro Gly Gln Arg Val Cys Val Ile Asp Glu Ile Gly Lys Met Glu  
 104 109 114 119

ctc ttc agt cag ctt ttc att caa gct gtt cgt cag acg ctg tct acc 556  
 Leu Phe Ser Gln Leu Phe Ile Gln Ala Val Arg Gln Thr Leu Ser Thr  
 120 125 130 135

cca ggg act ata atc ctt ggc aca atc cca gtt cct aaa gga aag cca 604  
 Pro Gly Thr Ile Ile Leu Gly Thr Ile Pro Val Pro Lys Gly Lys Pro  
 136 141 146 151

ctg gct ctt gta gaa gaa atc aga aac aga aag gat gtg aag gtg ttt 652  
 Leu Ala Leu Val Glu Glu Ile Arg Asn Arg Lys Asp Val Lys Val Phe  
 152 157 162 167

aat gtc acc aag gaa aac aga aac cac ctt ctg cca gat atc gtg acg 700  
 Asn Val Thr Lys Glu Asn Arg Asn His Leu Leu Pro Asp Ile Val Thr  
 168 173 178 183

tgc gtg cag agc agc agg aag tga agacacgtgc attcctgcct tccgtgaagg 754  
 Cys Val Gln Ser Ser Arg Lys \*  
 184 189

agtgcccgagt tcaagaggag cctgatggag ccctgcctgt cgaggctgta tgcctatggg 814

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taaaagatca aaaaaaaaaa a 895

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Glu Pro Val Gly Cys Gly Glu Cys Arg Gly Ser Ser Val Asp Pro  
2 7 12 17

cgg agc acc ttc gtg ttg agt aac ctg gcg gag gtg gtg gag cgt gtg 154  
Arg Ser Thr Phe Val Leu Ser Asn Leu Ala Glu Val Val Glu Arg Val  
18 23 28 33

ctc acc ttc ctg ccc gcc aag gcg ttg ctg cgg gtg gcc tgc gtg tgc 202  
Leu Thr Phe Leu Pro Ala Lys Ala Leu Leu Arg Val Ala Cys Val Cys  
34 39 44 49

cgc tta tgg agg gag tgt gtg cgc aga gta ttg cgg acc cat cgg agc 250  
Arg Leu Trp Arg Glu Cys Val Arg Arg Val Leu Arg Thr His Arg Ser  
50 55 60 65

gta acc tgg atc tcc gca ggc ctg gcg gag gcc ggc cac ctg gag ggg 298  
Val Thr Trp Ile Ser Ala Gly Leu Ala Glu Ala Gly His Leu Glu Gly  
66 71 76 81

cat tgc ttg gtt cgc gtg gta gca gag gag ctt gag aat gtt cgc atc 346  
His Cys Leu Val Arg Val Val Ala Glu Glu Leu Glu Asn Val Arg Ile  
82 87 92 97

tta cca cat aca gtt ctt tac atg gct gat tca gaa act ttc att agt 394  
Leu Pro His Thr Val Leu Tyr Met Ala Asp Ser Glu Thr Phe Ile Ser  
98 103 108 113

ctg gaa gag tgt cgt ggc cat aag aga gca agg aaa aga act agt atg 442  
Leu Glu Glu Cys Arg Gly His Lys Arg Ala Arg Lys Arg Thr Ser Met  
114 119 124 129

gaa aca gca ctt gcc ctt gag aag cta ttc ccc aaa caa tgc caa gtc 490  
Glu Thr Ala Leu Ala Leu Glu Lys Leu Phe Pro Lys Gln Cys Gln Val  
130 135 140 145

ctt ggg att gtg acc cca gga att gta gtg act cca atg gga tca ggt 538  
Leu Gly Ile Val Thr Pro Gly Ile Val Val Thr Pro Met Gly Ser Gly  
146 151 156 161

agc aat cga cct cag gaa ata gaa att gga gaa tct ggt ttt gct tta 586  
Ser Asn Arg Pro Gln Glu Ile Glu Ile Gly Glu Ser Gly Phe Ala Leu  
162 167 172 177

tta ttc cct caa att gaa gga ata aaa ata caa ccc ttt cat ttt att 634  
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178 183 188 193

aag gat cca aag aat tta aca tta gaa aga cat caa ctc act gaa gta 682  
Lys Asp Pro Lys Asn Leu Thr Leu Glu Arg His Gln Leu Thr Glu Val  
194 199 204 209

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Gly Leu Leu Asp Asn Pro Glu Leu Arg Val Val Leu Val Phe Gly Tyr	
210 215 220 225	
aat tgc tgt aag gtg gga gcc agt aat tat ctg cag caa gta gtc agc	778
Asn Cys Cys Lys Val Gly Ala Ser Asn Tyr Leu Gln Gln Val Val Ser	
226 231 236 241	
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Thr Phe Ser Asp Met Asn Ile Ile Leu Ala Gly Gly Gln Val Asp Asn	
242 247 252 257	
ctg tca tca ctg act tct gaa aag aac cct ctg gat att gat gcc tcg	874
Leu Ser Ser Leu Thr Ser Glu Lys Asn Pro Leu Asp Ile Asp Ala Ser	
258 263 268 273	
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Gly Val Val Gly Leu Ser Phe Ser Gly His Arg Ile Gln Ser Ala Thr	
274 279 284 289	
gtg ctc ctc aac gag gac gtc agt gat gag aag act gct gag gct gcg	970
Val Leu Leu Asn Glu Asp Val Ser Asp Glu Lys Thr Ala Glu Ala Ala	
290 295 300 305	
atg cag cgc ctc aaa gcg gcc aac att cca gag cat aac acc att ggc	1018
Met Gln Arg Leu Lys Ala Ala Asn Ile Pro Glu His Asn Thr Ile Gly	
306 311 316 321	
ttc atg ttt gca tgc gtt ggc agg ggc ttt cag tat tac aga gcc aag	1066
Phe Met Phe Ala Cys Val Gly Arg Gly Phe Gln Tyr Tyr Arg Ala Lys	
322 327 332 337	
ggg aat gtt gag gct gat gca ttt aga aag ttt ttt cct agt gtt ccc	1114
Gly Asn Val Glu Ala Asp Ala Phe Arg Lys Phe Phe Pro Ser Val Pro	
338 343 348 353	
tta ttc ggc ttc ttt gga aat gga gaa att gga tgt gat cgg ata gtc	1162
Leu Phe Gly Phe Phe Gly Asn Gly Glu Ile Gly Cys Asp Arg Ile Val	
354 359 364 369	
act ggg aac ttt ata ttg agg aaa tgt aat gag gta aaa gat gat gat	1210
Thr Gly Asn Phe Ile Leu Arg Lys Cys Asn Glu Val Lys Asp Asp Asp	
370 375 380 385	
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Ser Lys *	
402	

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Gly Ile Leu Ala Gly Gly Ala Arg Glu Ala Ser Cys Arg Tyr Pro Ala
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ctg ggg cct cgc ctc gcc gct cac ttt cca gcg cag cgg ccg ccg cag      152
Leu Gly Pro Arg Leu Ala Ala His Phe Pro Ala Gln Arg Pro Pro Gln
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cgg aca ctc cag aac ggc ctg gcc ctg cag cgg tgc ctg cac gcg acg      200
Arg Thr Leu Gln Asn Gly Leu Ala Leu Gln Arg Cys Leu His Ala Thr
  36                               41                               46                               51

gcg acc cgg gct ctc ccg ctc att ccc atc gtg gtg gag cag acg ggt      248
Ala Thr Arg Ala Leu Pro Leu Ile Pro Ile Val Val Glu Gln Thr Gly
  52                               57                               62                               67

cgc ggc gag cgc gcc tat gac atc tac tcg cgg ctg ctg cgg gag cgc      296
Arg Gly Glu Arg Ala Tyr Asp Ile Tyr Ser Arg Leu Leu Arg Glu Arg
  68                               73                               78                               83

atc gtg tgc gtc atg ggc ccg atc gat gac agc gtt gcc agc ctt gtt      344
Ile Val Cys Val Met Gly Pro Ile Asp Asp Ser Val Ala Ser Leu Val
  84                               89                               94                               99

atc gca cag ctc ctc ttc ctg ctt ctc gcc gcc ggc acc cca ggc atg      392
Ile Ala Gln Leu Leu Phe Leu Leu Leu Ala Ala Gly Thr Pro Gly Met
  100                               105                               110                               115

cgc cac tcg ctc ccc aac tcc cgt atc atg atc cac cag ccc tca gga      440
Arg His Ser Leu Pro Asn Ser Arg Ile Met Ile His Gln Pro Ser Gly
  116                               121                               126                               131

ggc gcc cgg ggc caa gcc aca gac att gcc atc cag gca gag gag atc      488
Gly Ala Arg Gly Gln Ala Thr Asp Ile Ala Ile Gln Ala Glu Glu Ile
  132                               137                               142                               147

atg aag ctc aag aag cag ctc tat aac atc tac gcc aag cac acc aaa      536
Met Lys Leu Lys Lys Gln Leu Tyr Asn Ile Tyr Ala Lys His Thr Lys
  148                               153                               158                               163

cag agc ctg cag gtg atc gag tcc gcc atg gag agg gac cgc tac atg      584
Gln Ser Leu Gln Val Ile Glu Ser Ala Met Glu Arg Asp Arg Tyr Met
  164                               169                               174                               179

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agc ccc atg gag gcc cag gag ttt ggc atc tta gac aag gtt ctg gtc	632
Ser Pro Met Glu Ala Gln Glu Phe Gly Ile Leu Asp Lys Val Leu Val	
180 185 190 195	
cac cct ccc cag gac ggt gag gat gag ccc acg ctg gtg cag aag gag	680
His Pro Pro Gln Asp Gly Glu Asp Glu Pro Thr Leu Val Gln Lys Glu	
196 201 206 211	
cct gta gaa gca gcg ccg gca gca gaa cct gtc cca gct agc acc tga	728
Pro Val Glu Ala Ala Pro Ala Ala Glu Pro Val Pro Ala Ser Thr *	
212 217 222 227	
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Met Leu Thr Ser Leu Ser Arg Pro	
1 5	
ata act acc atg gct ctc agt gcc ttg gtg tac cct ggg atg tgt ggc	159
Ile Thr Thr Met Ala Leu Ser Ala Leu Val Tyr Pro Gly Met Cys Gly	
9 14 19 24	
ctt ctg gcc aag cat ctg tca ttt cat att gtt gga gca ttc ctt ata	207
Leu Leu Ala Lys His Leu Ser Phe His Ile Val Gly Ala Phe Leu Ile	
25 30 35 40	
acc ctg ggg ttg cag ctc tct gta agt ttg ctg tgg cct gac caa gaa	255
Thr Leu Gly Leu Gln Leu Ser Val Ser Leu Leu Trp Pro Asp Gln Glu	
41 46 51 56	
aga agg cat atg cag att tct aca gaa att ata att gaa tta aag aat	303
Arg Arg His Met Gln Ile Ser Thr Glu Ile Ile Ile Glu Leu Lys Asn	
57 62 67 72	
ttg agg tga ggaaggc taatatctct cagagtacaa agtgattttg gaacataaag	359

Leu Arg \*  
73

tatttctttg ggttgaatta cataaaagtt tgtcactgta cctgtgttcc tgaactatct 419  
gtgaaacatg aatatgtggg ctaagaaatt gtttatctta ataaataatt aacaaaccct 479  
ttaaacggtt aaaaaaaaa agtcatggtc agtctttttt catatgtata gaccacctaac 539  
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Met Ser Gly Arg Leu Trp Ser Lys Ala Ile Phe Ala Gly Tyr Lys Arg  
1 5 10 15  
ggt ctc cgg aac caa agg gag cac aca gct ctt ctt aaa att gaa ggt 153  
Gly Leu Arg Asn Gln Arg Glu His Thr Ala Leu Leu Lys Ile Glu Gly  
17 22 27 32  
ggt tac gcc cga gat gaa aca gaa ttc tat ttg ggc aag aga tgc gct 201  
Val Tyr Ala Arg Asp Glu Thr Glu Phe Tyr Leu Gly Lys Arg Cys Ala  
33 38 43 48  
tat gta tat aaa gca aag aac aac aca gtc act cct ggc ggc aaa cca 249  
Tyr Val Tyr Lys Ala Lys Asn Asn Thr Val Thr Pro Gly Gly Lys Pro  
49 54 59 64  
aac aaa acc aga gtc atc tgg gga aaa gta act cgg gcc cat gga aac 297  
Asn Lys Thr Arg Val Ile Trp Gly Lys Val Thr Arg Ala His Gly Asn  
65 70 75 80  
agt ggc atg gtt cgt gcc aaa ttc cga agc aat ctt cct gct aag gcc 345  
Ser Gly Met Val Arg Ala Lys Phe Arg Ser Asn Leu Pro Ala Lys Ala  
81 86 91 96  
att gga cac aga atc cga gtg atg ctg tac ccc tca agg att taa act 393  
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97 102 107

aacgaagt

401

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gagcaaaagt tgcacagcta aaccaggggc tcattccag gacagac atg cag tta 176  
Met Gln Leu  
1

tgg att ccg aaa gac aag tca agg aca ctg atg aca ttg aaa gtc cta 224  
Trp Ile Pro Lys Asp Lys Ser Arg Thr Leu Met Thr Leu Lys Val Leu  
4 9 14 19

aac gca gta tcc gag aca gtg gct aca tcg act gct ggg att ccg agc 272  
Asn Ala Val Ser Glu Thr Val Ala Thr Ser Thr Ala Gly Ile Pro Ser  
20 25 30 35

gca gcg act ccc tct ctc ctc ctc gcc acg gca gag atg att cct tcg 320  
Ala Ala Thr Pro Ser Leu Leu Leu Ala Thr Ala Glu Met Ile Pro Ser  
36 41 46 51

aca gcc tgg att cct ttg gct ctc gct cgt cgg cag acg cct tca cca 368  
Thr Ala Trp Ile Pro Leu Ala Leu Ala Arg Arg Gln Thr Pro Ser Pro  
52 57 62 67

gat gta gtc ctc agg gga agc agc gat ggg aga gga agc gac tct gaa 416  
Asp Val Val Leu Arg Gly Ser Ser Asp Gly Arg Gly Ser Asp Ser Glu  
68 73 78 83

tcc gac ttg cct cat cgg aag ctg cca gat gtg aag aag gat gac atg 464  
Ser Asp Leu Pro His Arg Lys Leu Pro Asp Val Lys Lys Asp Asp Met  
84 89 94 99

tct gca cgg cgg act tcc cat ggt gag ccg aaa tca gca gtg cct ttt 512  
Ser Ala Arg Arg Thr Ser His Gly Glu Pro Lys Ser Ala Val Pro Phe  
100 105 110 115

aac cag tac ctc ccg aac aaa agc aat cag acg gcc tac gtc ccc gcg 560  
Asn Gln Tyr Leu Pro Asn Lys Ser Asn Gln Thr Ala Tyr Val Pro Ala  
116 121 126 131

cct ctg aga aag aag aaa gca gag aga gag gaa tac cgc aag agc tgg 608  
Pro Leu Arg Lys Lys Lys Ala Glu Arg Glu Glu Tyr Arg Lys Ser Trp

132	137	142	147	
agt acc gcc acc tcc ccg ctg ggt ggg gag agg ccc ttc aga tac ggt				656
Ser Thr Ala Thr Ser Pro Leu Gly Gly Glu Arg Pro Phe Arg Tyr Gly				
148	153	158	163	
ccg aga act cct gtg tct gat gac gca gag agc acc agc atg ttt gac				704
Pro Arg Thr Pro Val Ser Asp Asp Ala Glu Ser Thr Ser Met Phe Asp				
164	169	174	179	
atg cgg tgt gag gag gag gcc gcg gtg cag ccg cac agc agg gcc cgc				752
Met Arg Cys Glu Glu Glu Ala Ala Val Gln Pro His Ser Arg Ala Arg				
180	185	190	195	
cag gag cag ctg cag ctg ata aat aac cag ctg agg gaa gag gac gac				800
Gln Glu Gln Leu Gln Leu Ile Asn Asn Gln Leu Arg Glu Glu Asp Asp				
196	201	206	211	
aaa tgg caa gat gac ctg gct cgt tgg aag agt cgt aga aga agt gtt				848
Lys Trp Gln Asp Asp Leu Ala Arg Trp Lys Ser Arg Arg Arg Ser Val				
212	217	222	227	
tct cag gac tta atc aag aaa gag gaa gaa agg aaa aaa atg gag aag				896
Ser Gln Asp Leu Ile Lys Lys Glu Glu Glu Arg Lys Lys Met Glu Lys				
228	233	238	243	
tta ctg gct gga gaa gat ggg aca agt gaa cga agg aaa agc atc aaa				944
Leu Leu Ala Gly Glu Asp Gly Thr Ser Glu Arg Arg Lys Ser Ile Lys				
244	249	254	259	
acc tac aga gaa att gtt caa gaa aaa gag cgg aga gag aga gag ctg				992
Thr Tyr Arg Glu Ile Val Gln Glu Lys Glu Arg Arg Glu Arg Glu Leu				
260	265	270	275	
cat gaa gca tat aag aac gct cgg tcc cag gag gag gca gag ggg atc				1040
His Glu Ala Tyr Lys Asn Ala Arg Ser Gln Glu Glu Ala Glu Gly Ile				
276	281	286	291	
ctt caa cag tac att gag agg ttc acc atc agt gag gct gtt ctc gaa				1088
Leu Gln Gln Tyr Ile Glu Arg Phe Thr Ile Ser Glu Ala Val Leu Glu				
292	297	302	307	
cgc ttg gag atg cca aaa att ctg gaa aga agc cat tca aca gag cca				1136
Arg Leu Glu Met Pro Lys Ile Leu Glu Arg Ser His Ser Thr Glu Pro				
308	313	318	323	
aat tta tcc tcc ttc ctg aat gac ccc aat ccc atg aaa tac ctg cgg				1184
Asn Leu Ser Ser Phe Leu Asn Asp Pro Asn Pro Met Lys Tyr Leu Arg				
324	329	334	339	
caa cag tca ctg cct cca ccc aaa ttc act gcc act gtt gaa acc acc				1232
Gln Gln Ser Leu Pro Pro Pro Lys Phe Thr Ala Thr Val Glu Thr Thr				
340	345	350	355	
att gct cgt gcc agt gtt ctg gat acc agc atg tca gca ggc agt ggg				1280
Ile Ala Arg Ala Ser Val Leu Asp Thr Ser Met Ser Ala Gly Ser Gly				
356	361	366	371	



tct cca agc aaa act gtc act ccc aaa gca gtg cct atg ctg aca ccc	1328
Ser Pro Ser Lys Thr Val Thr Pro Lys Ala Val Pro Met Leu Thr Pro	
372 377 382 387	
aag cct tac tcc cag ccc aaa aat tct caa gat gtt ctg aag acc ttt	1376
Lys Pro Tyr Ser Gln Pro Lys Asn Ser Gln Asp Val Leu Lys Thr Phe	
388 393 398 403	
aag gta gac ggg aaa gtc agt gtg aat gga gag acg gtt cat aga gag	1424
Lys Val Asp Gly Lys Val Ser Val Asn Gly Glu Thr Val His Arg Glu	
404 409 414 419	
gag gag aag gaa aga gag tgt ccc acg gtg gca cct gcc cac tcc tta	1472
Glu Glu Lys Glu Arg Glu Cys Pro Thr Val Ala Pro Ala His Ser Leu	
420 425 430 435	
acc aaa tcc cag atg ttt gaa ggt gtg gcc aga gtg cac ggg tct cca	1520
Thr Lys Ser Gln Met Phe Glu Gly Val Ala Arg Val His Gly Ser Pro	
436 441 446 451	
ctg gag ctg aaa caa gac aac ggt agc atc gag atc aac ata aag aag	1568
Leu Glu Leu Lys Gln Asp Asn Gly Ser Ile Glu Ile Asn Ile Lys Lys	
452 457 462 467	
cca aac tct gtt ccc caa gag ctg gca gca acc act gag aaa acg gaa	1616
Pro Asn Ser Val Pro Gln Glu Leu Ala Ala Thr Thr Glu Lys Thr Glu	
468 473 478 483	
ccg aat agt caa gag gac aag aat gat ggt gga aaa tca aga aaa ggg	1664
Pro Asn Ser Gln Glu Asp Lys Asn Asp Gly Gly Lys Ser Arg Lys Gly	
484 489 494 499	
aat ata gaa ctt gcc tca tca gaa cca cag cat ttt aca aca act gtg	1712
Asn Ile Glu Leu Ala Ser Ser Glu Pro Gln His Phe Thr Thr Thr Val	
500 505 510 515	
act cga tgc agc ccg acc gtg gcc ttt gtg gaa ttt ccc tcc agc ccc	1760
Thr Arg Cys Ser Pro Thr Val Ala Phe Val Glu Phe Pro Ser Ser Pro	
516 521 526 531	
cag ctg aag aat gat gtg tcg gaa gaa aaa gac cag aag aaa cca gaa	1808
Gln Leu Lys Asn Asp Val Ser Glu Glu Lys Asp Gln Lys Lys Pro Glu	
532 537 542 547	
aat gaa atg agt gga aag gtg gag ttg gtg ctg tca caa aag gtg gta	1856
Asn Glu Met Ser Gly Lys Val Glu Leu Val Leu Ser Gln Lys Val Val	
548 553 558 563	
aag cca aaa tct cca gaa ccc gaa gca acg ctg aca ttt cca ttt ctg	1904
Lys Pro Lys Ser Pro Glu Pro Glu Ala Thr Leu Thr Phe Pro Phe Leu	
564 569 574 579	
gac aaa atg cct gaa gcc aac caa cta cat ttg cca aat ctc aat tct	1952
Asp Lys Met Pro Glu Ala Asn Gln Leu His Leu Pro Asn Leu Asn Ser	
580 585 590 595	

caa gtg gat tct cca agc agt gag aag tca cct gtt acg aca cct ttt	2000
Gln Val Asp Ser Pro Ser Ser Glu Lys Ser Pro Val Thr Thr Pro Phe	
596 601 606 611	
aag ttc tgg gca tgg gac cca gaa gag gag cgc agg cga cag gaa aaa	2048
Lys Phe Trp Ala Trp Asp Pro Glu Glu Glu Arg Arg Arg Gln Glu Lys	
612 617 622 627	
tgg caa cag gaa cag gaa cgt ttg ctc cag gag aga tac cag aag gag	2096
Trp Gln Gln Glu Gln Glu Arg Leu Leu Gln Glu Arg Tyr Gln Lys Glu	
628 633 638 643	
cag gac aag ctg aaa gaa gag tgg gaa aag gcc caa aag gag gtg gaa	2144
Gln Asp Lys Leu Lys Glu Glu Trp Glu Lys Ala Gln Lys Glu Val Glu	
644 649 654 659	
gag gaa gaa cgc aga tac tat gag gag gag cgt aag ata att gaa gac	2192
Glu Glu Glu Arg Arg Tyr Tyr Glu Glu Glu Arg Lys Ile Ile Glu Asp	
660 665 670 675	
act gtg gtt cca ttt act gtt tct tca agt tcc gct gac cag ctg tct	2240
Thr Val Val Pro Phe Thr Val Ser Ser Ser Ser Ala Asp Gln Leu Ser	
676 681 686 691	
acc tct tcc tcc atg act gaa ggc agt ggg aca atg aat aag ata gac	2288
Thr Ser Ser Ser Met Thr Glu Gly Ser Gly Thr Met Asn Lys Ile Asp	
692 697 702 707	
ctg gga aac tgt caa gat gaa aaa caa gac aga aga tgg aag aaa tca	2336
Leu Gly Asn Cys Gln Asp Glu Lys Gln Asp Arg Arg Trp Lys Lys Ser	
708 713 718 723	
ttc cag gga gat gac agt gac tta ttg ctg aag act agg gaa agt gat	2384
Phe Gln Gly Asp Asp Ser Asp Leu Leu Leu Lys Thr Arg Glu Ser Asp	
724 729 734 739	
cga ctg gag gag aag ggc agc cta act gaa ggg gcc ttg gct cat tct	2432
Arg Leu Glu Glu Lys Gly Ser Leu Thr Glu Gly Ala Leu Ala His Ser	
740 745 750 755	
ggg aac cct gta tca aaa gga gtc cat gaa gac cat cag ctg gat acc	2480
Gly Asn Pro Val Ser Lys Gly Val His Glu Asp His Gln Leu Asp Thr	
756 761 766 771	
gag gct ggg gcc cca cac tgt gga aca aac cca cag ctt gct cag gat	2528
Glu Ala Gly Ala Pro His Cys Gly Thr Asn Pro Gln Leu Ala Gln Asp	
772 777 782 787	
cca tcc cag aat cag cag aca tca aat cca acg cac agt tca gaa gat	2576
Pro Ser Gln Asn Gln Gln Thr Ser Asn Pro Thr His Ser Ser Glu Asp	
788 793 798 803	
gtg aag cca aaa acc ctc ccg ctg gat aaa agc att aac cat cag atc	2624
Val Lys Pro Lys Thr Leu Pro Leu Asp Lys Ser Ile Asn His Gln Ile	
804 809 814 819	
gag tct ccc agt gaa agg cgg aag tct ata agt gga aag aag ctg tgc	2672

Glu Ser Pro Ser Glu Arg Arg Lys Ser Ile Ser Gly Lys Lys Leu Cys	
820 825 830 835	
tct tcc tgt ggg ctt cct ttg ggt aaa gga gct gca atg atc atc gag	2720
Ser Ser Cys Gly Leu Pro Leu Gly Lys Gly Ala Ala Met Ile Ile Glu	
836 841 846 851	
acc ctc aat ctc tat ttt cac atc cag tgt ttc agg tgt gga att tgt	2768
Thr Leu Asn Leu Tyr Phe His Ile Gln Cys Phe Arg Cys Gly Ile Cys	
852 857 862 867	
aaa ggc cag ctt gga gat gca gtg agt ggg acg gat gtt agg att cga	2816
Lys Gly Gln Leu Gly Asp Ala Val Ser Gly Thr Asp Val Arg Ile Arg	
868 873 878 883	
aat ggt ctc ctg aac tgt aat gat tgc tac atg cga tcc aga agt gcc	2864
Asn Gly Leu Leu Asn Cys Asn Asp Cys Tyr Met Arg Ser Arg Ser Ala	
884 889 894 899	
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Gly Gln Pro Thr Thr Leu *	
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actaactttc atttaaagta ttatttctaa aatgcctctg agaaacagta aaaaataaaa	5677

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ctcaaatcaa aaaaaaaaaa aa 5759

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ctagggggccc tggcccagct cgggctgaca ggtgagggga acgggggggg gtcggggcaa 180

agctccatct ccccttcctt taaccaggtc ctagggctga ggttttaagc cagggctgga 240

gggcaaaggt cataacctca ccagccacct ctgaggtc atg gaa cct ggg aac 293  
Met Glu Pro Gly Asn  
1

aga agc ctc aac ccc cac aag acc aag cat cac atg gag tgt agg gtc 341  
Arg Ser Leu Asn Pro His Lys Thr Lys His His Met Glu Cys Arg Val  
6 11 16 21

act ggg aga gca gag gtc aca gcc tct aga gaa ggg aga ggg gcg tgt 389  
Thr Gly Arg Ala Glu Val Thr Ala Ser Arg Glu Gly Arg Gly Ala Cys  
22 27 32 37

gca tgg gag tgt ggc tca tct cgg ggg cca tgg ggc ctc ctg agg tac 437  
Ala Trp Glu Cys Gly Ser Ser Arg Gly Pro Trp Gly Leu Leu Arg Tyr  
38 43 48 53

acc ttt gcc cct gta agg gcc tct agg ccc tgg gcc tgc ctc ccc aag 485  
Thr Phe Ala Pro Val Arg Ala Ser Arg Pro Trp Ala Cys Leu Pro Lys  
54 59 64 69

ggc tca cta agc cag agg cca aag gtg ccc cct ccc gtt cac cta cca 533  
Gly Ser Leu Ser Gln Arg Pro Lys Val Pro Pro Pro Val His Leu Pro  
70 75 80 85

ccc aag tcc tca tgc cct ccg agg gct ggg gga gga ggg gct caa gga 581  
Pro Lys Ser Ser Cys Pro Pro Arg Ala Gly Gly Gly Gly Ala Gln Gly  
86 91 96 101

agg cgg gtt cca tgt aca tat tta tca ccc ctt tca cat agc ccc aag 629  
Arg Arg Val Pro Cys Thr Tyr Leu Ser Pro Leu Ser His Ser Pro Lys  
102 107 112 117

acc ttt tgt aca ttt tta cag ggg tgc ccc tag caacaggcg  
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 118 123 128

671

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 cattcttttc ctctcatttt ttgtagcact tctggggccc agtagccaac tggggttctc 240  
 ccattgctgc catcaatgat atg aaa aag tct cca gag att atc agt ggg 290  
 Met Lys Lys Ser Pro Glu Ile Ile Ser Gly  
 1 5  
 cgg atg aca ttt ggt aca gcc tcg gaa ctg gct tct gtt tgc atg cca 338  
 Arg Met Thr Phe Gly Thr Ala Ser Glu Leu Ala Ser Val Cys Met Pro  
 11 16 21 26  
 cgc aac aaa tga agt agcccagctc atccaggagg ggcggcttat caaacacgag 393  
 Arg Asn Lys \*  
 27  
 atgactaaaa cggcatctgc ataacaatgg aaaaggaaga acacggtctt gaaggacag 453  
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gcggggactg ggacgcacgg ccgcgcgcgc ggacacggcc atg gag gac gcg gga	595
	Met Glu Asp Ala Gly
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Gly Ser Leu Gly Asn Ile Asp Asp Leu Ala Gln Gln Tyr Ala Asp Tyr	
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Tyr Asn Thr Cys Phe Ser Asp Val Cys Glu Arg Met Glu Glu Leu Arg	
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Lys Arg Arg Val Ser Gln Asp Leu Glu Val Glu Lys Pro Asp Ala Ser	
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Pro Thr Ser Leu Gln Leu Arg Ser Gln Ile Glu Glu Ser Leu Gly Phe	
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Lys Ser Asn Ser Glu Asp Ser Ser Val Gly Lys Gly Asp Trp Lys Lys	

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Lys Asn Lys Tyr Phe	Trp Gln Asn Phe Arg	Lys Asn Gln Lys Gly	Ile	
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Met Arg Gln Thr Ser	Lys Gly Glu Asp Val	Gly Tyr Val Ala Ser	Glu	
166	171	176	181	
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Ile Thr Met Ser Asp	Glu Glu Arg Ile Gln	Leu Met Met Met Val	Lys	
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Glu Lys Met Ile Thr	Ile Glu Glu Ala Leu	Ala Arg Leu Lys Glu	Tyr	
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Glu Ala Gln His Arg	Gln Ser Ala Ala Leu	Asp Pro Ala Asp Trp	Pro	
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Asp Gly Ser Tyr Pro	Thr Phe Asp Gly Ser	Ser Asn Cys Asn Ser	Arg	
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Glu Gln Ser Asp Asp	Glu Thr Glu Glu Ser	Val Lys Phe Lys Arg	Leu	
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His Lys Leu Val Asn	Ser Thr Arg Arg Val	Arg Lys Lys Leu Ile	Arg	
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Pro Tyr Arg Gly Pro Phe Cys Gly Arg Ala Arg Val His Thr Asp Phe	
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Thr Pro Ser Pro Tyr Asp Thr Asp Ser Leu Lys Leu Lys Lys Gly Asp	
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Ile Ile Asp Ile Ile Ser Lys Pro Pro Met Gly Thr Trp Met Gly Leu	
582 587 592 597	

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Val Ser Pro Gly Cys Ile Ser Ser Val Ser Asp Trp Leu Ile Ser Ile				
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Phe Lys Leu Pro Pro Gly Pro Glu Ala Met *				
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Ile Met Lys Tyr Ala Glu Lys Leu Ile Gln Glu Gly Lys Ala Tyr Val	
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Cys Lys Glu Ala Pro Cys Val Leu Ile Tyr Ile Pro Asp Gly His Thr	
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Thr Phe Pro Val Val Glu Tyr Leu Leu Glu Asp Val Ile Glu Lys Ile	
390 395 400 405	
agg tat gtt cca gaa caa aaa gaa cac aga tcc cag ttt aag agg ggt	1363
Arg Tyr Val Pro Glu Gln Lys Glu His Arg Ser Gln Phe Lys Arg Gly	
406 411 416 421	
ttc atg caa ggg cat gta aat aga caa aaa aaa aaa aaa gaa gca	1411
Phe Met Gln Gly His Val Asn Arg Gln Lys Lys Lys Lys Lys Glu Ala	
422 427 432 437	
ata tat aaa gaa cgt tgg cca gat tat gta agg gaa ctg cga aga agg	1459
Ile Tyr Lys Glu Arg Trp Pro Asp Tyr Val Arg Glu Leu Arg Arg Arg	
438 443 448 453	
tat tct gca agt act gta gat gtt ata gaa atg atg gag gat gat aaa	1507
Tyr Ser Ala Ser Thr Val Asp Val Ile Glu Met Met Glu Asp Asp Lys	
454 459 464 469	
gtt gat ctg aat ttg att gtt gcc ctc atc cga tac att gtt ttg gaa	1555
Val Asp Leu Asn Leu Ile Val Ala Leu Ile Arg Tyr Ile Val Leu Glu	
470 475 480 485	
gaa gag gat ggt gcg ata ctg gtc ttt ctg cca ggc tgg gac aat atc	1603
Glu Glu Asp Gly Ala Ile Leu Val Phe Leu Pro Gly Trp Asp Asn Ile	
486 491 496 501	
agc act tta cat gat ctc ttg atg tca caa gta atg ttt aaa tca gat	1651
Ser Thr Leu His Asp Leu Leu Met Ser Gln Val Met Phe Lys Ser Asp	
502 507 512 517	
aaa ttt tta att ata cct tta cat tca ctg atg cct aca gtt aac cag	1699
Lys Phe Leu Ile Ile Pro Leu His Ser Leu Met Pro Thr Val Asn Gln	
518 523 528 533	
aca cag gtg ttt aaa aga acc cct cct ggt gtt cgg aaa ata gta att	1747
Thr Gln Val Phe Lys Arg Thr Pro Pro Gly Val Arg Lys Ile Val Ile	
534 539 544 549	
gct acc aac att gcg gag act agc att acc ata gat gat gtc gtt tat	1795
Ala Thr Asn Ile Ala Glu Thr Ser Ile Thr Ile Asp Asp Val Val Tyr	
550 555 560 565	
gtg ata gat gga gga aaa ata aaa gag acg cat ttt gat act cag aac	1843
Val Ile Asp Gly Gly Lys Ile Lys Glu Thr His Phe Asp Thr Gln Asn	
566 571 576 581	
aat atc agt aca atg tcc gct gag tgg gtt agt aaa gct aat gcc aaa	1891
Asn Ile Ser Thr Met Ser Ala Glu Trp Val Ser Lys Ala Asn Ala Lys	
582 587 592 597	
cag aga aaa ggt cga gct gga aga gtt caa cct ggt cat tgc tat cat	1939
Gln Arg Lys Gly Arg Ala Gly Arg Val Gln Pro Gly His Cys Tyr His	
598 603 608 613	
ctg tat aat ggt ctt aga gca agt ctt cta gat gac tat caa ctg cca	1987



838	843	848	853	
aga aaa atg gta aaa gtt tac aca aaa acc gat ggc ctg gtt gct gtt				2707
Arg Lys Met Val Lys Val Tyr Thr Lys Thr Asp Gly Leu Val Ala Val				
854	859	864	869	
cat cct aaa tct gtt aat gtg gag caa aca gac ttt cac tac aac tgg				2755
His Pro Lys Ser Val Asn Val Glu Gln Thr Asp Phe His Tyr Asn Trp				
870	875	880	885	
ctt atc tat cac cta aag atg aga aca agc agt ata tac ttg tat gac				2803
Leu Ile Tyr His Leu Lys Met Arg Thr Ser Ser Ile Tyr Leu Tyr Asp				
886	891	896	901	
tgc aca gag gtt tcc cca tac tgt ctc ttg ttt ttt gga ggt gac att				2851
Cys Thr Glu Val Ser Pro Tyr Cys Leu Leu Phe Phe Gly Gly Asp Ile				
902	907	912	917	
tcc atc cag aag gat aac gat cag gaa act att gct gta gat gag tgg				2899
Ser Ile Gln Lys Asp Asn Asp Gln Glu Thr Ile Ala Val Asp Glu Trp				
918	923	928	933	
att gta ttt cag tct cca gca aga att gcc cat ctt gtt aag gaa tta				2947
Ile Val Phe Gln Ser Pro Ala Arg Ile Ala His Leu Val Lys Glu Leu				
934	939	944	949	
aga aag gaa cta gat att ctt ctg caa gag aag att gaa agt cct cat				2995
Arg Lys Glu Leu Asp Ile Leu Leu Gln Glu Lys Ile Glu Ser Pro His				
950	955	960	965	
cct gta gac tgg aat gac act aaa tcc aga gac tgt gca gta ctg tca				3043
Pro Val Asp Trp Asn Asp Thr Lys Ser Arg Asp Cys Ala Val Leu Ser				
966	971	976	981	
gct att ata gac ttg atc aaa aca cag gaa aag gca act ccc agg aac				3091
Ala Ile Ile Asp Leu Ile Lys Thr Gln Glu Lys Ala Thr Pro Arg Asn				
982	987	992	997	
ttt ccg cca cga ttc cag gat gga tat tac agc tga cagc ttttcagggg				3141
Phe Pro Pro Arg Phe Gln Asp Gly Tyr Tyr Ser *				
998	1003	1008		
tggtctgaaa agccagtttg acagccattc ttcattcattg tttaaatttt ggctggatgc				3201
caaaccctgg gacatgaaca attttcatgt gtaaggtaga agccttcagt aggtagtaaa				3261
gacttaatgt gcatgacttg atgttatatg tagagatata tatatatata tatatatacc				3321
ataaaagcaa tatgtttctct gatcatatac tctgctgtgg tcatgcccac tctttgggag				3381
tatattccct ttatatatat tgagtattgt accacttgag aaattccttt gttctgttat				3441
acaaaattaa tctttctgct cataatgatt gatgatacca ccagtaaaaa taggatgttt				3501
accccaaaac aagtgtcaat taagaatttg aacacaacca catttttttaa aatgaaactt				3561
ctatcggaag taaattaatt tgttgtaata aagtccagta ttttaataaaa tgtacaatgt				3621

taaatctcaa aaaaaaaaaa aaaaaaaaaa actcggcgca agctta

3667

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ataagcttgc ggccgcatat cttttttttt tttttttttt ttaagtattt atatttttat 120  
tccactctaa cacctcagag taaagaactg atgggcaggc atcggcttct gctgacaatt 180  
gccaaaccggc atgagattgc tgagctgagg tggactctcc agacactgga actggaactc 240  
caggcccaat ggctcttgtt aagaatgctg caacgtgaga cccttgagag agactgactt 300  
gttgaag atg aag aga aaa cca aga gcc tcc agt cca gtt gtt gaa gag 349  
Met Lys Arg Lys Pro Arg Ala Ser Ser Pro Val Val Glu Glu  
1 5 10  
caa cca cga gcc aac acc aag gag aca agg aag aag aag tcc ttc tot 397  
Gln Pro Arg Ala Asn Thr Lys Glu Thr Arg Lys Lys Lys Ser Phe Ser  
15 20 25 30  
caa ccg atg acc gca agc aca aag aag agt ccc aag ata gcg aag aaa 445  
Gln Pro Met Thr Ala Ser Thr Lys Lys Ser Pro Lys Ile Ala Lys Lys  
31 36 41 46  
gga aaa taa ctcaagg gagagccagg aagaaaaatg ctccacaaaa atccatggct 501  
Gly Lys \*  
47  
ttaagaatac ttgaggaagg gagcaggcca acaccctctg gccacagtga ccagctgaat 561  
gaggaactct aacagaatga gctgcagttg gagcaacaga ggggacatag ctggaacaac 621  
agagcgaggg gacacagccg gagcaacaga gtgggaggat gccaacatt tcaactctct 681  
ccctgagcag cgagtaattt cagggaagc ccagagacta ggatccatct gagaagtctt 741  
cagaggtctg acccagagta ctcaacaaca ggatacgtcc catggtgatg aaaataaaat 801  
gaatcttgtg ttcaccgttg tattcctcac gacttaagtt aaaaacctga tgaaaagtgg 861  
ttaatctcca taatgggtgt tagctccatc gcaggagca tgaggttga cagacagagt 921  
cgggcaaggt tatggagaag acttaatcca tccacaagag gtccgagtat gttgatgaag 981

tgatgacagt actgtttcaa gaacatcaac cctgccgcag tgcggacgcg tgggtcgacc 1041

cgggaa 1047

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<212> DNA  
<213> Homo sapiens

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<221> CDS  
<222> (89)..(838)

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cggtggcctc ggtcccgta agccaggc atg aag atc aca agg cag aaa cat 112  
Met Lys Ile Thr Arg Gln Lys His  
1 5

gcc aag aag cat ctt ggc ttc ttc cgc aac aac ttc gga gtc cgc gag 160  
Ala Lys Lys His Leu Gly Phe Phe Arg Asn Asn Phe Gly Val Arg Glu  
9 14 19 24

cgc tac cag atc ctg ctg gac ggc acc ttc tgt cag gcg gcg ctg cgg 208  
Pro Tyr Gln Ile Leu Leu Asp Gly Thr Phe Cys Gln Ala Ala Leu Arg  
25 30 35 40

ggc cgc atc cag ctg cgg gag cag ctg ccc cgc tac ctc atg ggg gag 256  
Gly Arg Ile Gln Leu Arg Glu Gln Leu Pro Arg Tyr Leu Met Gly Glu  
41 46 51 56

acg cag ctg tgc acc aca aga tgt gtg tta aaa gag cta gaa aca ttg 304  
Thr Gln Leu Cys Thr Thr Arg Cys Val Leu Lys Glu Leu Glu Thr Leu  
57 62 67 72

gga aag gac tta tat ggg gca aaa ctg att gca caa aaa tgc caa gtt 352  
Gly Lys Asp Leu Tyr Gly Ala Lys Leu Ile Ala Gln Lys Cys Gln Val  
73 78 83 88

cga aat tgt cct cat ttc aag aat gca gtg agt gga tca gaa tgt ctg 400  
Arg Asn Cys Pro His Phe Lys Asn Ala Val Ser Gly Ser Glu Cys Leu  
89 94 99 104

ctt tcc atg gtt gaa gag gga aat cct cat cat tat ttt gtg gca aca 448  
Leu Ser Met Val Glu Glu Gly Asn Pro His His Tyr Phe Val Ala Thr  
105 110 115 120

cag gat cag aat ttg tct gtg aaa gta aaa aag aag cct gga gtt cct 496  
Gln Asp Gln Asn Leu Ser Val Lys Val Lys Lys Lys Pro Gly Val Pro  
121 126 131 136

ctc atg ttt att att cag aac act atg gtt ttg gac aaa cct tct ccc 544

Leu Met Phe Ile Ile Gln Asn Thr Met Val	Leu Asp Lys Pro Ser Pro	
137	142	147 152
aaa aca att gcc ttt gta aaa gca gtg gag tca ggt cag ctt gtc tca		592
Lys Thr Ile Ala Phe Val Lys Ala Val Glu Ser Gly Gln Leu Val Ser		
153	158	163 168
gtg cat gag aaa gaa agt atc aaa cat ctc aaa gag gaa cag ggt tta		640
Val His Glu Lys Glu Ser Ile Lys His Leu Lys Glu Glu Gln Gly Leu		
169	174	179 184
gtg aaa aac act gaa cag agt aga aga aaa aag cgc aag aaa ata agt		688
Val Lys Asn Thr Glu Gln Ser Arg Arg Lys Lys Arg Lys Lys Ile Ser		
185	190	195 200
ggg ccc aat cct ctt agt tgt ttg aag aaa aag aaa aag gca ccg gac		736
Gly Pro Asn Pro Leu Ser Cys Leu Lys Lys Lys Lys Lys Ala Pro Asp		
201	206	211 216
aca caa tca tct gct tct gaa aag aaa aga aaa aga aaa aga att cgg		784
Thr Gln Ser Ser Ala Ser Glu Lys Lys Arg Lys Arg Lys Arg Ile Arg		
217	222	227 232
aac aga tct aac cca aaa gta ctt tct gag aag cag aat gca gaa gga		832
Asn Arg Ser Asn Pro Lys Val Leu Ser Glu Lys Gln Asn Ala Glu Gly		
233	238	243 248
gaa tga atccttttga tactttcaag gacattcaaa tgtgaaaatg aattttttac		888
Glu *		
249		
aactagaagt atttataata aaagacccaaa cttattttttg taaatgaacc catatgcttt		948
actaaaatta attataaaat aaaaacagt accagtctag ccagcatgga aaaccccatc		1008
tctactaaaa tacaaaaatt agctgggcat gatgggtgcac agttgtaatt ccagctactc		1068
aggaggctga ggcattgagaa tcgcttgaac ctggggaggca gagattgcag tgagcccagt		1128
tcgtgtcact tcaactccagc ctggggcaaca gaggtagaac atgtctcaaa aaaaaaata		1188
aaaacagtga atgggtgtag gtgtgatgga attcacttta cttactaaat ggtttcggga		1248
ggttgtttct ccaggtaaaa ttgtgcctc tctgggtcca tccccactt caaacattat		1308
atgcaaacag ttttaaaaaa tcttacagtt ctaaaagggc ttgtgacaaa aaagaggcag		1368
tcctctttca cattgaca		1386

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 <212> DNA  
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 <221> CDS  
 <222> (125)..(1474)

<400> 64

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tatctggagc agtcggggcg ggcaggccca gctgagaggt gcgcgggcga ggacagcggc	120
agcg atg cgg gaa tgc ata tca gtc cac gtg ggc caa gcg gga gtt cag	169
Met Arg Glu Cys Ile Ser Val His Val Gly Gln Ala Gly Val Gln	
1 5 10	
att ggc aat gcc tgc tgg gag ctc ttc tgc ctg gaa cac ggc atc cag	217
Ile Gly Asn Ala Cys Trp Glu Leu Phe Cys Leu Glu His Gly Ile Gln	
16 21 26 31	
gca gac ggc act ttt gat gct caa gct agc aag atc aac gat gat gac	265
Ala Asp Gly Thr Phe Asp Ala Gln Ala Ser Lys Ile Asn Asp Asp Asp	
32 37 42 47	
tcc ttc acc acc ttt ttc agc gag act ggc aat ggg aag cat gtg ccc	313
Ser Phe Thr Thr Phe Phe Ser Glu Thr Gly Asn Gly Lys His Val Pro	
48 53 58 63	
cgg gcc gtc atg ata gat ctg gag cct act gta gtg gat gag gtt cgg	361
Arg Ala Val Met Ile Asp Leu Glu Pro Thr Val Val Asp Glu Val Arg	
64 69 74 79	
gca gga acc tac cgc cag ctc ttc cat cca gag cag ctg atc aca gga	409
Ala Gly Thr Tyr Arg Gln Leu Phe His Pro Glu Gln Leu Ile Thr Gly	
80 85 90 95	
aag gag gat gca gcc aac aac tat gcc cgg ggc cac tac acg gtg ggc	457
Lys Glu Asp Ala Ala Asn Asn Tyr Ala Arg Gly His Tyr Thr Val Gly	
96 101 106 111	
aag gag agc att gac ctg gtg ctg gac cgc ata cgg aag ctg aca gat	505
Lys Glu Ser Ile Asp Leu Val Leu Asp Arg Ile Arg Lys Leu Thr Asp	
112 117 122 127	
gct tgc tct ggc ctg cag ggc ttc ctg att ttc cac agt ttt ggt ggg	553
Ala Cys Ser Gly Leu Gln Gly Phe Leu Ile Phe His Ser Phe Gly Gly	
128 133 138 143	
ggc act ggc tcc ggc ttc act tct ctg ctg atg gaa cgc ctc tcc ctg	601
Gly Thr Gly Ser Gly Phe Thr Ser Leu Leu Met Glu Arg Leu Ser Leu	
144 149 154 159	
gat tat ggc aag aaa tcc aag ctg gag ttt gcc atc tac cca gcc ccc	649
Asp Tyr Gly Lys Lys Ser Lys Leu Glu Phe Ala Ile Tyr Pro Ala Pro	
160 165 170 175	
cag gtc tct act gca gtg gtg gag ccc tac aac tcc atc ctg acc acc	697
Gln Val Ser Thr Ala Val Val Glu Pro Tyr Asn Ser Ile Leu Thr Thr	
176 181 186 191	

cac acc aca ctg gaa cat tca gat tgt gct ttc atg gtg gac aac gaa	745
His Thr Thr Leu Glu His Ser Asp Cys Ala Phe Met Val Asp Asn Glu	
192 197 202 207	
gcc atc tat gac atc tgc cgc agg aac ctt gac att gag cgc cct acc	793
Ala Ile Tyr Asp Ile Cys Arg Arg Asn Leu Asp Ile Glu Arg Pro Thr	
208 213 218 223	
tat acc aac ctc aac cgc ctc atc agt cag att gtg tcc tca atc act	841
Tyr Thr Asn Leu Asn Arg Leu Ile Ser Gln Ile Val Ser Ser Ile Thr	
224 229 234 239	
gct tct ctc cgc ttt gac ggg gcc ctc aat gtg gac ctc act gag ttc	889
Ala Ser Leu Arg Phe Asp Gly Ala Leu Asn Val Asp Leu Thr Glu Phe	
240 245 250 255	
cag acc aac ctg gtg ccc tac ccc cgc atc cac ttc ccg ctg gtc acc	937
Gln Thr Asn Leu Val Pro Tyr Pro Arg Ile His Phe Pro Leu Val Thr	
256 261 266 271	
tac gcg ccc atc atc tct gcc gag aaa gcc tat cac gaa cag ctc tct	985
Tyr Ala Pro Ile Ile Ser Ala Glu Lys Ala Tyr His Glu Gln Leu Ser	
272 277 282 287	
gtg gcc gag ata acc agc tcc tgc ttt gag ccc aac agc cag atg gtg	1033
Val Ala Glu Ile Thr Ser Ser Cys Phe Glu Pro Asn Ser Gln Met Val	
288 293 298 303	
aag tgc gac ccg aga cat ggc aag tac atg gcc tgc tgc atg ctc tac	1081
Lys Cys Asp Pro Arg His Gly Lys Tyr Met Ala Cys Cys Met Leu Tyr	
304 309 314 319	
cgg ggc gac gtg gtg ccc aag gat gtg aat gtc gct att gct gcc atc	1129
Arg Gly Asp Val Val Pro Lys Asp Val Asn Val Ala Ile Ala Ala Ile	
320 325 330 335	
aag acc aag agg acc atc cag ttt gta gac tgg tgt ccc aca ggc ttc	1177
Lys Thr Lys Arg Thr Ile Gln Phe Val Asp Trp Cys Pro Thr Gly Phe	
336 341 346 351	
aag gtg ggc atc aac tac cag ccc ccg acc gtg gtc ccc ggg gga gac	1225
Lys Val Gly Ile Asn Tyr Gln Pro Pro Thr Val Val Pro Gly Gly Asp	
352 357 362 367	
ctg gcc aag gtg cag cgg gcc gtc tgc atg ctc agc aac acc acg gcc	1273
Leu Ala Lys Val Gln Arg Ala Val Cys Met Leu Ser Asn Thr Thr Ala	
368 373 378 383	
att gcg gag gcc tgg gcc cgc ctc gac cac aag ttc gac ctc atg tac	1321
Ile Ala Glu Ala Trp Ala Arg Leu Asp His Lys Phe Asp Leu Met Tyr	
384 389 394 399	
gcc aag cgg gcc ttt gtg cat tgg tat gtg gga gag ggg atg gaa gaa	1369
Ala Lys Arg Ala Phe Val His Trp Tyr Val Gly Glu Gly Met Glu Glu	
400 405 410 415	
gga gaa ttt tct gag gcc agg gaa gac tta gct gcc ctg gag aag gat	1417

Gly Glu Phe Ser Glu Ala Arg Glu Asp Leu Ala Ala Leu Glu Lys Asp  
416 421 426 431

tat gaa gaa gtg ggg act gat tcg ttt gaa gaa gaa aat gaa ggg gag 1465  
Tyr Glu Glu Val Gly Thr Asp Ser Phe Glu Glu Glu Asn Glu Gly Glu  
432 437 442 447

gaa ttt taa atatatacct tccccttgaa aaaaaaaat 1503  
Glu Phe \*  
448

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<212> DNA  
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tcggcagcag ctggaattca cgttccttca gaagatatcc ctgaaact atg gac gaa 117  
Met Asp Glu  
1

gat tct tcg ttg aga gat tat act gta agc ttg gac tct gac atg gat 165  
Asp Ser Ser Leu Arg Asp Tyr Thr Val Ser Leu Asp Ser Asp Met Asp  
4 9 14 19

gat gca tct aaa ttt ctt cag gat tat gat att cga act ggc aac acc 213  
Asp Ala Ser Lys Phe Leu Gln Asp Tyr Asp Ile Arg Thr Gly Asn Thr  
20 25 30 35

agg gaa gct ttg agt cct tgt cca agt act gta agt acc aag tct cag 261  
Arg Glu Ala Leu Ser Pro Cys Pro Ser Thr Val Ser Thr Lys Ser Gln  
36 41 46 51

cca ggc agc agt gct tct tct agt tct gga gtt aaa atg acc agc ttt 309  
Pro Gly Ser Ser Ala Ser Ser Ser Ser Gly Val Lys Met Thr Ser Phe  
52 57 62 67

gct gaa caa aaa ttc agg aaa ctg aat cat acc gat gga aaa agt agt 357  
Ala Glu Gln Lys Phe Arg Lys Leu Asn His Thr Asp Gly Lys Ser Ser  
68 73 78 83

gga agc agt tct caa aaa act aca cca gaa ggc tct gaa ctt aat att 405  
Gly Ser Ser Ser Gln Lys Thr Thr Pro Glu Gly Ser Glu Leu Asn Ile  
84 89 94 99

cct cat gtg gtt gct tgg gca caa att cca gaa gaa aca ggg ctt cca 453  
Pro His Val Val Ala Trp Ala Gln Ile Pro Glu Glu Thr Gly Leu Pro

100	105	110	115	
cag gga cgg gac act	acc cag ctg ttg gcc tct gaa atg gtg cat ctt	501		
Gln Gly Arg Asp Thr	Thr Gln Leu Leu Ala Ser Glu Met Val His Leu			
116	121	126	131	
agg atg aaa cta gaa	gaa aag agg cgt gct ata gaa gcc cag aaa aag	549		
Arg Met Lys Leu Glu	Glu Lys Arg Arg Ala Ile Glu Ala Gln Lys Lys			
132	137	142	147	
aaa atg gaa gct gct	ttt acc aaa cag aga cag aaa atg gga agg aca	597		
Lys Met Glu Ala Ala	Phe Thr Lys Gln Arg Gln Lys Met Gly Arg Thr			
148	153	158	163	
gca ttc ctt act gta	gtg aaa aag aaa ggg gat ggg ata tct cct cta	645		
Ala Phe Leu Thr Val	Val Lys Lys Lys Gly Asp Gly Ile Ser Pro Leu			
164	169	174	179	
cga gag gaa gcg gcg	ggt gca gaa gat gag aaa gta tat act gat cga	693		
Arg Glu Glu Ala Ala	Gly Ala Glu Asp Glu Lys Val Tyr Thr Asp Arg			
180	185	190	195	
gca aaa gaa aag gaa	tca caa aaa act gat gga caa agg agc aag tca	741		
Ala Lys Glu Lys Glu	Ser Gln Lys Thr Asp Gly Gln Arg Ser Lys Ser			
196	201	206	211	
ctg gca gat ata aaa	gag agc atg gag aat cct caa gcc aaa tgg cta	789		
Leu Ala Asp Ile Lys	Glu Ser Met Glu Asn Pro Gln Ala Lys Trp Leu			
212	217	222	227	
aag tct cca act aca	cct att gat cct gag aag cag tgg aac ctg gca	837		
Lys Ser Pro Thr Thr	Pro Ile Asp Pro Glu Lys Gln Trp Asn Leu Ala			
228	233	238	243	
agc ccc tca gaa gaa	act tta aat gaa gga gag att tta gaa tat acc	885		
Ser Pro Ser Glu Glu	Thr Leu Asn Glu Gly Glu Ile Leu Glu Tyr Thr			
244	249	254	259	
aaa tcc att gaa aag	tta aat tca tcc ctg cat ttt cta caa caa gaa	933		
Lys Ser Ile Glu Lys	Leu Asn Ser Ser Leu His Phe Leu Gln Gln Glu			
260	265	270	275	
atg caa cgc ttg tca	ctt cag cag gag atg tta atg cag atg aga gag	981		
Met Gln Arg Leu Ser	Leu Gln Gln Glu Met Leu Met Gln Met Arg Glu			
276	281	286	291	
caa caa tct tgg gtg	att tca cct cca caa ccc tct cca cag aaa cag	1029		
Gln Gln Ser Trp Val	Ile Ser Pro Pro Gln Pro Ser Pro Gln Lys Gln			
292	297	302	307	
att cga gat ttt aag	cct tct aag cag gca ggc ctg tca tca gcc att	1077		
Ile Arg Asp Phe Lys	Pro Ser Lys Gln Ala Gly Leu Ser Ser Ala Ile			
308	313	318	323	
gca cca ttc tcc tca	gac tcc cct cgt cct act cac cca tct cca cag	1125		
Ala Pro Phe Ser Ser	Asp Ser Pro Arg Pro Thr His Pro Ser Pro Gln			
324	329	334	339	

tct tct aac agg aaa agt gca tct ttt tct gtt aaa agt caa agg act	1173
Ser Ser Asn Arg Lys Ser Ala Ser Phe Ser Val Lys Ser Gln Arg Thr	
340 345 350 355	
cct agg cca aat gag tta aaa ata aca cct ttg aat cga acc ttg aca	1221
Pro Arg Pro Asn Glu Leu Lys Ile Thr Pro Leu Asn Arg Thr Leu Thr	
356 361 366 371	
cct cct cgg tct gtg gat agc ctt cct cgg tta agg agg ttt tca cca	1269
Pro Pro Arg Ser Val Asp Ser Leu Pro Arg Leu Arg Arg Phe Ser Pro	
372 377 382 387	
agt caa gtt cct att caa act agg tca ttt gta tgt ttt ggg gat gat	1317
Ser Gln Val Pro Ile Gln Thr Arg Ser Phe Val Cys Phe Gly Asp Asp	
388 393 398 403	
gga gaa cct cag tta aag gaa tcc aaa cct aaa gag gaa gtt aaa aag	1365
Gly Glu Pro Gln Leu Lys Glu Ser Lys Pro Lys Glu Glu Val Lys Lys	
404 409 414 419	
gag gaa ttg gaa tcc aaa ggg act ttg gaa cag cgt gga cat aat cca	1413
Glu Glu Leu Glu Ser Lys Gly Thr Leu Glu Gln Arg Gly His Asn Pro	
420 425 430 435	
gaa gaa aag gaa atc aaa cct ttt gag tca aca gtc tct gaa gtc cta	1461
Glu Glu Lys Glu Ile Lys Pro Phe Glu Ser Thr Val Ser Glu Val Leu	
436 441 446 451	
tca ctg cct gtc aca gag act gta tgt ctg aca cca aat gag gac caa	1509
Ser Leu Pro Val Thr Glu Thr Val Cys Leu Thr Pro Asn Glu Asp Gln	
452 457 462 467	
ttg aat caa ccc aca gaa ccc cct cct aaa ccc gtt ttc cca ccc act	1557
Leu Asn Gln Pro Thr Glu Pro Pro Pro Lys Pro Val Phe Pro Pro Thr	
468 473 478 483	
gct cca aaa aat gtt aat ctg att gaa gtt tcc ctc tca gat ttg aaa	1605
Ala Pro Lys Asn Val Asn Leu Ile Glu Val Ser Leu Ser Asp Leu Lys	
484 489 494 499	
ccc cct gaa aag gct gat gta cct gtt gaa aaa tat gat gga gaa agt	1653
Pro Pro Glu Lys Ala Asp Val Pro Val Glu Lys Tyr Asp Gly Glu Ser	
500 505 510 515	
gat aaa gaa caa ttt gat gat gac cag aaa gta tgc tgt gga ttc ttt	1701
Asp Lys Glu Gln Phe Asp Asp Asp Gln Lys Val Cys Cys Gly Phe Phe	
516 521 526 531	
ttt aag gat gat caa aaa gca gaa aat gat atg gca atg aaa cgg gca	1749
Phe Lys Asp Asp Gln Lys Ala Glu Asn Asp Met Ala Met Lys Arg Ala	
532 537 542 547	
gct ttg ttg gag aaa aga tta aga agg gaa aag gaa act cag ctc cgg	1797
Ala Leu Leu Glu Lys Arg Leu Arg Arg Glu Lys Glu Thr Gln Leu Arg	
548 553 558 563	

aaa caa cag ttg gaa gca gaa atg gag cat aag aag gag gaa aca agg Lys Gln Gln Leu Glu Ala Glu Met Glu His Lys Lys Glu Glu Thr Arg 564 569 574 579	1845
cgt aaa act gag gaa gaa cgt cag aag aaa gaa gat gag aga gca cgc Arg Lys Thr Glu Glu Glu Arg Gln Lys Lys Glu Asp Glu Arg Ala Arg 580 585 590 595	1893
aga gaa ttt att agg caa gaa tat atg agg cgg aaa caa ctg aaa cta Arg Glu Phe Ile Arg Gln Glu Tyr Met Arg Arg Lys Gln Leu Lys Leu 596 601 606 611	1941
atg gaa gat atg gat aca gta att aaa ccc cgt cct caa gta gta aaa Met Glu Asp Met Asp Thr Val Ile Lys Pro Arg Pro Gln Val Val Lys 612 617 622 627	1989
caa aaa aaa cag cga cca aaa tct att cac aga gat cat att gaa tcc Gln Lys Lys Gln Arg Pro Lys Ser Ile His Arg Asp His Ile Glu Ser 628 633 638 643	2037
ccc aaa aca cca ata aag ggt cct cca gtc tct agc ctt tct ttg gca Pro Lys Thr Pro Ile Lys Gly Pro Pro Val Ser Ser Leu Ser Leu Ala 644 649 654 659	2085
tcg ctg aac acg ggt gat aac gag agt gta cat tca ggc aag agg acg Ser Leu Asn Thr Gly Asp Asn Glu Ser Val His Ser Gly Lys Arg Thr 660 665 670 675	2133
cca aga tca gag tct gta gaa ggc ttc tta tct cca agt cgt tgt ggc Pro Arg Ser Glu Ser Val Glu Gly Phe Leu Ser Pro Ser Arg Cys Gly 676 681 686 691	2181
agt cga aat gga gaa aaa gac tgg gag aat gca tca aca act tct tca Ser Arg Asn Gly Glu Lys Asp Trp Glu Asn Ala Ser Thr Thr Ser Ser 692 697 702 707	2229
gtg gct tct gga aca gaa tat aca gga cca aag ctc tac aaa gaa ccc Val Ala Ser Gly Thr Glu Tyr Thr Gly Pro Lys Leu Tyr Lys Glu Pro 708 713 718 723	2277
agt gca aaa tcc aat aag cac ata ata caa aat gct tta gct cat tgc Ser Ala Lys Ser Asn Lys His Ile Ile Gln Asn Ala Leu Ala His Cys 724 729 734 739	2325
tgt ttg gct gga aaa gta aat gaa ggt cag aag aaa aaa ata ctg gag Cys Leu Ala Gly Lys Val Asn Glu Gly Gln Lys Lys Lys Ile Leu Glu 740 745 750 755	2373
gaa atg gag aaa tca gat gcc aac aac ttc tta atc ttg ttc cgg gat Glu Met Glu Lys Ser Asp Ala Asn Asn Phe Leu Ile Leu Phe Arg Asp 756 761 766 771	2421
tca gga tgc cag ttc aga tct tta tac act tat tgc cca gaa act gaa Ser Gly Cys Gln Phe Arg Ser Leu Tyr Thr Tyr Cys Pro Glu Thr Glu 772 777 782 787	2469
gaa atc aat aaa ctg act ggg ata ggc cct aaa tct atc act aaa aaa	2517



cttgaatgat tatgtgaccc tggtatattt cagtgttgtg acaaagtgt aaactagcgg	3915
gggaagacag tattgtatca taaatgagat gcgtagtttg ttttctttca tgggaagtag	3975
agataaaaaat atatacatatt ctctaattga gttgttttaga gaaagaacta atgtctcata	4035
tgatgtattt acttatttta aaaaaagaa taggaatgag atgtccctga gctgtacttt	4095
tctattatta taaggccttt aggcatcagt gcatctgggt tatcaacatt ttctcaaagt	4155
ctgtcaatat tttactgtaa tttatgttct tataatttatg tatatttgtt aaaactgtaa	4215
aaaaatttca cagatttttt tccaatacct gtgcaagata catgtgtagc tcaaaactat	4275
ttgtgatcta ctgtttgcat gtaagagacc aggatatgta actcttatat tttaagtgt	4335
tacatattgt gtatataaca tatggatatt aaaaatgggg aattgcacat ttacctttt	4395
ggacagtaat ttctatcaca gttagaagga aatgatagtc aaatacacgt ttagattaaa	4455
actagttaa aaaattataa atgaatctaa tcaaaatgtg aatagtagtc aaaaggataa	4515
tttaataagc attttacgtt actaaatttg ttcatttcaa tattaactaa atttccctca	4575
tcaaagcaat ctttgtgata ttacttcgct attaaataaa gaaaattgga tgcaagacaa	4635
tggagaaact ttaaaactaa acaggaccac cttttattct taaatttgtg tgtgtccaac	4695
agttgaattg aatgtctata aggtctaaag gtagaatgtg aatattgcca cagagtccat	4755
tgctctcagt ataagatttt actttattaa tgcagaagga atatggatat atttctttaa	4815
gtctgcagat ttttttatta tgggtgcagct tttttttaat tatgttttta aaattataca	4875
gttgaaaaat atgccatttc ataaagtctg aggattttcg tcaaccttac tgaaacacac	4935
tgggtgcttc atcatcagag gtcaaattat tatgataact attccattaa gtttgccaaa	4995
catttgctgt ggttaccagt gcagcctgtc aaattctgct atttgacaca gctttggaaa	5055
gatttagttc ttgggttttc cgttttgtat tagaatgact gttacagttt tatttggctg	5115
tttaaagcca aattcagcta ttttaattatg gtttcatgga cactgttgag caatgtacag	5175
tgtatgggtg gcttacctgt ccactctaga gcattgctta caggtttttt gttttttaag	5235
atgctgtgct gtaaaatact gtcatacttg ctatttcctg gtacagtgtg gtttttcccc	5295
tttcatttga ataaaagcat ggcaccaa at gactcctttt ctgtttcttg aataaaatgt	5355
agtttttgggt aaaattattt g	5376

<210> 66  
<211> 1180



<212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> CDS  
 <222> (196)..(1077)

<400> 66

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ccgcccggcg gacccgcgcc ccgcccgggg agcggtggtg agagccccga ctccccggac	180
gcccggcgcc gtgcc atg ggg ttc ccg gcc gcg gcg ctg ctc tgc gcg ctg	231
Met Gly Phe Pro Ala Ala Ala Leu Leu Cys Ala Leu	
1 5 10	
tgc tgc ggc ctc ctg gcc ccg gct gcc cgc gcc ggc tac tcc gag gag	279
Cys Cys Gly Leu Leu Ala Pro Ala Ala Arg Ala Gly Tyr Ser Glu Glu	
13 18 23 28	
cgc tgc agc tgg agg ggc agc ggc ctc acc cag gag ccc ggc agc gtg	327
Arg Cys Ser Trp Arg Gly Ser Gly Leu Thr Gln Glu Pro Gly Ser Val	
29 34 39 44	
ggg cag ctg gcc ctg gcc tgt gcg gag ggc gcg gtt gag tgg ctg tac	375
Gly Gln Leu Ala Leu Ala Cys Ala Glu Gly Ala Val Glu Trp Leu Tyr	
45 50 55 60	
ccg gct ggg gcg ctg cgc ctg acc ctg gcc ggc ccc gat ccc aga gcg	423
Pro Ala Gly Ala Leu Arg Leu Thr Leu Gly Gly Pro Asp Pro Arg Ala	
61 66 71 76	
cgg ccc ggc atc gcc tgt ctg cgg ccg gtg cgg ccc ttc gcg ggc gcc	471
Arg Pro Gly Ile Ala Cys Leu Arg Pro Val Arg Pro Phe Ala Gly Ala	
77 82 87 92	
cag gtc ttc gcg gag cgc gca ggg ggc gcc ctg gag ctg ctg ctg gct	519
Gln Val Phe Ala Glu Arg Ala Gly Gly Ala Leu Glu Leu Leu Leu Ala	
93 98 103 108	
gag ggc ccg ggc ccg gca ggg ggc cgc tgc gtg cgc tgg ggt ccc cgc	567
Glu Gly Pro Gly Pro Ala Gly Gly Arg Cys Val Arg Trp Gly Pro Arg	
109 114 119 124	
gag cgc cgg gcc ctc ttc ctg cag gcc acg ccg cac cag gac atc agc	615
Glu Arg Arg Ala Leu Phe Leu Gln Ala Thr Pro His Gln Asp Ile Ser	
125 130 135 140	
cgc cgc gtg gcc gcc ttc cgc ttt gag ctg cgc gag gac ggg cgc ccc	663
Arg Arg Val Ala Ala Phe Arg Phe Glu Leu Arg Glu Asp Gly Arg Pro	
141 146 151 156	
gag ctg ccc ccg cag gcc cac ggt ctc ggc gta gac ggt gcc tgc agg	711
Glu Leu Pro Pro Gln Ala His Gly Leu Gly Val Asp Gly Ala Cys Arg	
157 162 167 172	

ccc tgc agc gac gct gag ctg ctc ctg gcc gca tgc acc agc gac ttc 759  
Pro Cys Ser Asp Ala Glu Leu Leu Leu Ala Ala Cys Thr Ser Asp Phe  
173 178 183 188

gta att cac ggg atc atc cat ggg gtc acc cat gac gtg gag ctg cag 807  
Val Ile His Gly Ile Ile His Gly Val Thr His Asp Val Glu Leu Gln  
189 194 199 204

gag tct gtc atc act gtg gtg gcc gcc cgt gtc ctc cgc cag aca ccg 855  
Glu Ser Val Ile Thr Val Val Ala Ala Arg Val Leu Arg Gln Thr Pro  
205 210 215 220

ccg ctg ttc cag gcg ggg cga tcc ggg gac cag ggg ctg acc tcc att 903  
Pro Leu Phe Gln Ala Gly Arg Ser Gly Asp Gln Gly Leu Thr Ser Ile  
221 226 231 236

cgt acc cca ctg cgc tgt ggc gtc cac ccg ggc cca ggc acc ttc ctc 951  
Arg Thr Pro Leu Arg Cys Gly Val His Pro Gly Pro Gly Thr Phe Leu  
237 242 247 252

ttc atg ggc tgg agc cgc ttt ggg gag gcc cgg ctg ggc tgt gcc cca 999  
Phe Met Gly Trp Ser Arg Phe Gly Glu Ala Arg Leu Gly Cys Ala Pro  
253 258 263 268

cga ttc cag gag ttc cgc cgt gcc tac gag gct gcc cgt gct gcc cac 1047  
Arg Phe Gln Glu Phe Arg Arg Ala Tyr Glu Ala Ala Arg Ala Ala His  
269 274 279 284

ctc cac ccc tgc gag gtg gcg ctg cac tga g gggctgggtg ctggggaggg 1098  
Leu His Pro Cys Glu Val Ala Leu His \*  
285 290

gctggtagga gggaggggtgg gccactgct ttggaggtga tgggactatc aataagaact 1158

ctgttcacgc aaaaaaaaaa aa 1180

<210> 67  
<211> 1540  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (210)..(1322)

<220>  
<221> misc\_feature  
<222> (1)...(1540)  
<223> n = a,t,c or g

<400> 67  
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gataccccac caaacccaaa aaaagagatc tctcgaggat ccgaattcgc ggccgcgctcg	120
accgacacga ccattcatttg tcgacgccgc tgccaccgcc tgccctgagag aagtcgctcg	180
ggccgacccc gtcgcctccg ccggctacc atg tcc gcc cag gcg cag atg cgg	233
Met Ser Ala Gln Ala Gln Met Arg	
1 5	
gcc ctg ctg gac cag ctc atg ggc acg gct cgg gac gac gaa acc aga	281
Ala Leu Leu Asp Gln Leu Met Gly Thr Ala Arg Asp Asp Glu Thr Arg	
9 14 19 24	
cag agg gtc aag ttt aca gat gac cgt gtc tgc aag agt cac ctt ctg	329
Gln Arg Val Lys Phe Thr Asp Asp Arg Val Cys Lys Ser His Leu Leu	
25 30 35 40	
gac tgc tgc ccc cat gac atc ctg gct ggg acg cgc atg gat tta gga	377
Asp Cys Cys Pro His Asp Ile Leu Ala Gly Thr Arg Met Asp Leu Gly	
41 46 51 56	
gaa tgt acc aaa atc cac gac ttg gcc ctc cga gca gat tat gag att	425
Glu Cys Thr Lys Ile His Asp Leu Ala Leu Arg Ala Asp Tyr Glu Ile	
57 62 67 72	
gca agt aaa gaa aga gac ctg ttt ttt gaa tta gat gca atg gat cac	473
Ala Ser Lys Glu Arg Asp Leu Phe Phe Glu Leu Asp Ala Met Asp His	
73 78 83 88	
ttg gag tcc ttt att gct gaa tgt gat cgg aga act gag ctc gcc aag	521
Leu Glu Ser Phe Ile Ala Glu Cys Asp Arg Arg Thr Glu Leu Ala Lys	
89 94 99 104	
aag cgg ctg gca gaa aca cag gag gaa atc agt gcg gaa gtt tct gca	569
Lys Arg Leu Ala Glu Thr Gln Glu Glu Ile Ser Ala Glu Val Ser Ala	
105 110 115 120	
aag gca gaa aaa gta cat gag tta aat gaa gaa ata gga aaa ctc ctt	617
Lys Ala Glu Lys Val His Glu Leu Asn Glu Glu Ile Gly Lys Leu Leu	
121 126 131 136	
gct aaa gcc gaa cag cta ggg gct gaa ggt aat gtg gat gaa tcc cag	665
Ala Lys Ala Glu Gln Leu Gly Ala Glu Gly Asn Val Asp Glu Ser Gln	
137 142 147 152	
aag att ctt atg gaa gtg gaa aaa gtt cgt gcg aag aaa aaa gaa gct	713
Lys Ile Leu Met Glu Val Glu Lys Val Arg Ala Lys Lys Lys Glu Ala	
153 158 163 168	
gag gaa gaa tac aga aat tcc atg cct gca tcc agt ttt cag cag caa	761
Glu Glu Glu Tyr Arg Asn Ser Met Pro Ala Ser Ser Phe Gln Gln Gln	
169 174 179 184	
aag ctg cgt gtc tgc gag gtc tgt tca gcc tac ctt ggt ctc cat gac	809
Lys Leu Arg Val Cys Glu Val Cys Ser Ala Tyr Leu Gly Leu His Asp	
185 190 195 200	
aat gac cgt cgc ctg gca gac cac ttc ggt ggc aag tta cac ttg ggg	857

Asn Asp Arg Arg Leu	Ala Asp His Phe Gly Gly Lys Leu His Leu Gly	
201	206 211 216	
ttc att cag atc cga	gag aag ctt gat cag ttg agg aaa act gtc gct	905
Phe Ile Gln Ile Arg	Glu Lys Leu Asp Gln Leu Arg Lys Thr Val Ala	
217	222 227 232	
gaa aag cag gag aag	aga aat cag gat cgc ttg agg agg aga gag gag	953
Glu Lys Gln Glu Lys	Arg Asn Gln Asp Arg Leu Arg Arg Arg Glu Glu	
233	238 243 248	
agg gaa cgg gag gag	cgt ctg agc agg agg tcg gga tca aga acc aga	1001
Arg Glu Arg Glu Glu	Arg Leu Ser Arg Arg Ser Gly Ser Arg Thr Arg	
249	254 259 264	
gat cgc agg agg tca	cgc tcc cgg gat cgg cgt cgg agg cgg tca aga	1049
Asp Arg Arg Arg Ser	Arg Ser Arg Asp Arg Arg Arg Arg Arg Ser Arg	
265	270 275 280	
tct acc tcc cga gag	cga cgg aaa ttg tcc cgg tcc cgg tcc cga gat	1097
Ser Thr Ser Arg Glu	Arg Arg Lys Leu Ser Arg Ser Arg Ser Arg Asp	
281	286 291 296	
aga cat cgg cgc cac	cgc agc cgt tcc cgg agc cac agc cgg gga cat	1145
Arg His Arg Arg His	Arg Ser Arg Ser Arg Ser His Ser Arg Gly His	
297	302 307 312	
cgt cgg gct tcc cgg	gac cga agt gcg aaa tac aag ttc tcc aga gag	1193
Arg Arg Ala Ser Arg	Asp Arg Ser Ala Lys Tyr Lys Phe Ser Arg Glu	
313	318 323 328	
cgg gca tcc aga gag	gag tcc tgg gag agc ggg cgg agc gag cga ggg	1241
Arg Ala Ser Arg Glu	Glu Ser Trp Glu Ser Gly Arg Ser Glu Arg Gly	
329	334 339 344	
ccc ccg gac tgg agg	ctt gag agc tcc aac ggg aag atg gct tca cgg	1289
Pro Pro Asp Trp Arg	Leu Glu Ser Ser Asn Gly Lys Met Ala Ser Arg	
345	350 355 360	
agg tca gaa gag aag	gag gcc ggc gag atc tga acccgtct cccgggtgct	1340
Arg Ser Glu Glu Lys	Glu Ala Gly Glu Ile *	
361	366 371	
gtaaatagtc tgataaacgt	tcacacagtc taaaattacc ctttatattt gctgaataca	1400
actcatcttt tgtagtttaa	aatttctatt gttttggagc tagctgtgag tttctagaag	1460
tgtacagagt tgctcctgtg	ttcccgggtc atgttgagta ggaataaata aatctgatgc	1520
tgctcctcta aaaaaaaaaa		1540

<210> 68  
 <211> 1363  
 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (210)..(1145)

<220>

<221> misc\_feature

<222> (1)...(1363)

<223> n = a,t,c or g

<400> 68

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gataccccac caaacccaaa aaaagagatc tctcgaggat ccgaattcgc ggccgcgtcg 120

accgacacga ccatcatttg tcgacgccgc tgccaccgcc tgccctgagag aagtcgtcgc 180

ggccgacccc gtcgctccg ccggctacc atg tcc gcc cag gcg cag atg cgg 233

Met Ser Ala Gln Ala Gln Met Arg

1

5

gcc ctg ctg gac cag ctc atg ggc acg gct cgg gac gac gaa acc aga 281

Ala Leu Leu Asp Gln Leu Met Gly Thr Ala Arg Asp Asp Glu Thr Arg

9

14

19

24

cag agg gtc aag ttt aca gat gac cgt gtc tgc aag agt cac ctt ctg 329

Gln Arg Val Lys Phe Thr Asp Asp Arg Val Cys Lys Ser His Leu Leu

25

30

35

40

gac tgc tgc ccc cat gac atc ctg gct ggg acg cgc atg gat tta gga 377

Asp Cys Cys Pro His Asp Ile Leu Ala Gly Thr Arg Met Asp Leu Gly

41

46

51

56

gaa tgt acc aaa atc cac gac ttg gcc ctc cga gca gat tat gag att 425

Glu Cys Thr Lys Ile His Asp Leu Ala Leu Arg Ala Asp Tyr Glu Ile

57

62

67

72

gca agt aaa gaa aga gac ctg ttt ttt gaa tta gat gca atg gat cac 473

Ala Ser Lys Glu Arg Asp Leu Phe Phe Glu Leu Asp Ala Met Asp His

73

78

83

88

ttg gag tcc ttt att gct gaa tgt gat cgg aga act gag ctc gcc aag 521

Leu Glu Ser Phe Ile Ala Glu Cys Asp Arg Arg Thr Glu Leu Ala Lys

89

94

99

104

aag cgg ctg gca gaa aca cag gag gaa atc agt gcg gaa gtt tct gca 569

Lys Arg Leu Ala Glu Thr Gln Glu Glu Ile Ser Ala Glu Val Ser Ala

105

110

115

120

aag gca gaa aaa gta cat gag tta aat gaa gaa ata gga aaa ctc ctt 617

Lys Ala Glu Lys Val His Glu Leu Asn Glu Glu Ile Gly Lys Leu Leu

121

126

131

136

gct aaa gcc gaa cag cta ggg gct gaa ggt aat gtg gat gaa tcc cag 665

Ala Lys Ala Glu Gln Leu Gly Ala Glu Gly Asn Val Asp Glu Ser Gln

137

142

147

152

aag att ctt atg gaa gtg gaa aaa gtt cgt gcg aag aaa aaa gaa gct	713
Lys Ile Leu Met Glu Val Glu Lys Val Arg Ala Lys Lys Lys Glu Ala	
153 158 163 168	
gag aaa act gtc gct gaa aag cag gag aag aga aat cag gat cgc ttg	761
Glu Lys Thr Val Ala Glu Lys Gln Glu Lys Arg Asn Gln Asp Arg Leu	
169 174 179 184	
agg agg aga gag gag agg gaa cgg gag gag cgt ctg agc agg agg tcg	809
Arg Arg Arg Glu Glu Arg Glu Arg Glu Glu Arg Leu Ser Arg Arg Ser	
185 190 195 200	
gga tca aga acc aga gat cgc agg agg tca cgc tcc cgg gat cgg cgt	857
Gly Ser Arg Thr Arg Asp Arg Arg Arg Ser Arg Ser Arg Asp Arg Arg	
201 206 211 216	
cgg agg cgg tca aga tct acc tcc cga gag cga cgg aaa ttg tcc cgg	905
Arg Arg Arg Ser Arg Ser Thr Ser Arg Glu Arg Arg Lys Leu Ser Arg	
217 222 227 232	
tcc cgg tcc cga gat aga cat cgg cgc cac cgc agc cgt tcc cgg agc	953
Ser Arg Ser Arg Asp Arg His Arg Arg His Arg Ser Arg Ser Arg Ser	
233 238 243 248	
cac agc cgg gga cat cgt cgg gct tcc cgg gac cga agt gcg aaa tac	1001
His Ser Arg Gly His Arg Arg Ala Ser Arg Asp Arg Ser Ala Lys Tyr	
249 254 259 264	
aag ttc tcc aga gag cgg gca tcc aga gag gag tcc tgg gag agc ggg	1049
Lys Phe Ser Arg Glu Arg Ala Ser Arg Glu Glu Ser Trp Glu Ser Gly	
265 270 275 280	
cgg agc gag cga ggg ccc ccg gac tgg agg ctt gag agc tcc aac ggg	1097
Arg Ser Glu Arg Gly Pro Pro Asp Trp Arg Leu Glu Ser Ser Asn Gly	
281 286 291 296	
aag atg gct tca cgg agg tca gaa gag aag gag gcc ggc gag atc tga	1145
Lys Met Ala Ser Arg Arg Ser Glu Glu Lys Glu Ala Gly Glu Ile *	
297 302 307 312	
acccgtctcc cgggtgctgt aaatagtctg ataaacgttc acacagtcta aaattaccct	1205
ttatatttgc tgaatacaac tcattctttg tagtttaaaa tttctattgt tttggagcta	1265
gctgtgagtt tctagaagtg tacagagttg ctctgtgtt cccgggtcat gttgagtagg	1325
aataaataaa tctgatgctg cctctgaaa aaaaaaaa	1363

<210> 69  
 <211> 3552  
 <212> DNA  
 <213> Homo sapiens

<220>

<221> CDS

<222> (30) .. (3218)

<400> 69

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Met Arg Leu Leu Ser Met Pro Gly  
1 5

gcc cag gga gct gca gca gca ggg tct gaa ccc cct cca gcc acc acg 101  
Ala Gln Gly Ala Ala Ala Ala Gly Ser Glu Pro Pro Pro Ala Thr Thr  
9 14 19 24

agc cca gag gga cag ccc aag gtc cac cga gcc cgc aaa acc atg tcc 149  
Ser Pro Glu Gly Gln Pro Lys Val His Arg Ala Arg Lys Thr Met Ser  
25 30 35 40

aaa cca gga aat gga cag ccc ccg gtc cct gag aag cgg ccc cct gaa 197  
Lys Pro Gly Asn Gly Gln Pro Pro Val Pro Glu Lys Arg Pro Pro Glu  
41 46 51 56

ata cag cat ttc cgc atg agt gat gat gtc cac tca ctg gga aag gtg 245  
Ile Gln His Phe Arg Met Ser Asp Asp Val His Ser Leu Gly Lys Val  
57 62 67 72

acc tca gat ctg gcc aaa agg agg aag ctg aac tca gga ggt ggc ctg 293  
Thr Ser Asp Leu Ala Lys Arg Arg Lys Leu Asn Ser Gly Gly Gly Leu  
73 78 83 88

tcg gag gag tta ggt tct gcc cgg cgt tca gga gaa gtg acc ctg acg 341  
Ser Glu Glu Leu Gly Ser Ala Arg Arg Ser Gly Glu Val Thr Leu Thr  
89 94 99 104

aaa ggg gac ccc ggg tcc ctg gag gag tgg gag acg gtg gtg ggt gat 389  
Lys Gly Asp Pro Gly Ser Leu Glu Glu Trp Glu Thr Val Val Gly Asp  
105 110 115 120

gac ttc agt ctc tac tat gat tcc tac tct gtg gat gag cgc gtg gac 437  
Asp Phe Ser Leu Tyr Tyr Asp Ser Tyr Ser Val Asp Glu Arg Val Asp  
121 126 131 136

tcc gac agc aag tct gaa gtt gaa gct cta act gaa caa cta agt gaa 485  
Ser Asp Ser Lys Ser Glu Val Glu Ala Leu Thr Glu Gln Leu Ser Glu  
137 142 147 152

gag gag gag gag gaa gag gag gaa gaa gaa gaa gag gaa gag gag gag 533  
Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu  
153 158 163 168

gaa gag gaa gaa gaa gag gaa gat gag gag tca ggg aat cag tca gat 581  
Glu Glu Glu Glu Glu Glu Asp Glu Glu Ser Gly Asn Gln Ser Asp  
169 174 179 184

agg agt ggt tcc agt ggc cgg cgc aag gcc aag aag aaa tgg cga aaa 629  
Arg Ser Gly Ser Ser Gly Arg Arg Lys Ala Lys Lys Lys Trp Arg Lys  
185 190 195 200

gac agc cca tgg gtg aag ccg tct cgg aaa cgg cgc aag cgg gag cct Asp Ser Pro Trp Val Lys Pro Ser Arg Lys Arg Arg Lys Arg Glu Pro 201 206 211 216	677
ccg cgg gcc aag gag cca cga gga gtg aat ggt gtg ggc tcc tca ggc Pro Arg Ala Lys Glu Pro Arg Gly Val Asn Gly Val Gly Ser Ser Gly 217 222 227 232	725
ccc agt gag tac atg gag gtc cct ctg ggg tcc ctg gag ctg ccc agc Pro Ser Glu Tyr Met Glu Val Pro Leu Gly Ser Leu Glu Leu Pro Ser 233 238 243 248	773
gag ggg acc ctc tcc ccc aac cac gct ggg gtg tcc aat gac aca tct Glu Gly Thr Leu Ser Pro Asn His Ala Gly Val Ser Asn Asp Thr Ser 249 254 259 264	821
tcg ctg gag aca gag cga ggg ttt gag gag ttg ccc ctg tgc agc tgc Ser Leu Glu Thr Glu Arg Gly Phe Glu Glu Leu Pro Leu Cys Ser Cys 265 270 275 280	869
cgc atg gag gca ccc aag att gac cgc atc agc gag agg gcg ggg cac Arg Met Glu Ala Pro Lys Ile Asp Arg Ile Ser Glu Arg Ala Gly His 281 286 291 296	917
aag tgc atg gcc act gag agt gtg gac gga gag ctg tca ggc tgc aat Lys Cys Met Ala Thr Glu Ser Val Asp Gly Glu Leu Ser Gly Cys Asn 297 302 307 312	965
gcc gcc atc ctc aag cgg gag acc atg agg cca tcc agc cgt gtg gcc Ala Ala Ile Leu Lys Arg Glu Thr Met Arg Pro Ser Ser Arg Val Ala 313 318 323 328	1013
ctg atg gtg ctc tgt gag acc cac cgc gcc cgc atg gtc aaa cac cac Leu Met Val Leu Cys Glu Thr His Arg Ala Arg Met Val Lys His His 329 334 339 344	1061
tgc tgc ccg ggc tgc ggc tac ttc tgc acg gcg ggc acc ttc ctg gag Cys Cys Pro Gly Cys Gly Tyr Phe Cys Thr Ala Gly Thr Phe Leu Glu 345 350 355 360	1109
tgc cac cct gac ttc cgt gtg gcc cac cgc ttc cac aag gcc tgt gtg Cys His Pro Asp Phe Arg Val Ala His Arg Phe His Lys Ala Cys Val 361 366 371 376	1157
tct cag ctg aat ggg atg gtc ttc tgt ccc cac tgt ggg gag gat gct Ser Gln Leu Asn Gly Met Val Phe Cys Pro His Cys Gly Glu Asp Ala 377 382 387 392	1205
tct gaa gct caa gag gtg acc atc ccc cgg ggt gac ggg gtg acc cca Ser Glu Ala Gln Glu Val Thr Ile Pro Arg Gly Asp Gly Val Thr Pro 393 398 403 408	1253
ccg gcc ggc act gca gct cct gca ccc cca ccc ctg tcc cag gat gtc Pro Ala Gly Thr Ala Ala Pro Ala Pro Pro Pro Leu Ser Gln Asp Val 409 414 419 424	1301
ccc ggg aga gca gac act tct cag ccc agt gcc cgg atg cga ggg cat	1349



Pro Gly Arg Ala Asp Thr Ser Gln Pro Ser Ala Arg Met Arg Gly His	
425	440
430	435
ggg gaa ccc cgg cgc ccg ccc tgc gat ccc ctg gct gac acc att gac	1397
Gly Glu Pro Arg Arg Pro Pro Cys Asp Pro Leu Ala Asp Thr Ile Asp	
441	456
446	451
agc tca ggg ccc tcc ctg acc ctg ccc aat ggg ggc tgc ctt tca gcc	1445
Ser Ser Gly Pro Ser Leu Thr Leu Pro Asn Gly Gly Cys Leu Ser Ala	
457	472
462	467
gtg ggg ctg cca ctg ggg cca ggc cgg gag gcc ctg gaa aag gcc ctg	1493
Val Gly Leu Pro Leu Gly Pro Gly Arg Glu Ala Leu Glu Lys Ala Leu	
473	488
478	483
gtc atc cag gag tca gag agg cgg aag aag ctc cgt ttc cac cct cgg	1541
Val Ile Gln Glu Ser Glu Arg Arg Lys Lys Leu Arg Phe His Pro Arg	
489	504
494	499
cag ttg tac ctg tcc gtg aag cag ggc gag ctg cag aag gtg atc ctg	1589
Gln Leu Tyr Leu Ser Val Lys Gln Gly Glu Leu Gln Lys Val Ile Leu	
505	520
510	515
atg ctg ttg gac aac ctg gac ccc aac ttc cag agc gac cag cag agc	1637
Met Leu Leu Asp Asn Leu Asp Pro Asn Phe Gln Ser Asp Gln Gln Ser	
521	536
526	531
aag cgc acg ccc ctg cat gca gcc gcc cag aag ggc tcc gtg gag atc	1685
Lys Arg Thr Pro Leu His Ala Ala Ala Gln Lys Gly Ser Val Glu Ile	
537	552
542	547
tgc cat gtg ctg ctg cag gct gga gcc aac ata aat gca gtg gac aaa	1733
Cys His Val Leu Leu Gln Ala Gly Ala Asn Ile Asn Ala Val Asp Lys	
553	568
558	563
cag cag cgg acg cca ctg atg gag gcc gtg gtg aac aac cac ctg gag	1781
Gln Gln Arg Thr Pro Leu Met Glu Ala Val Val Asn Asn His Leu Glu	
569	584
574	579
gta gcc cgt tac atg gtg cag cgt ggt ggc tgt gtc tat agc aag gag	1829
Val Ala Arg Tyr Met Val Gln Arg Gly Gly Cys Val Tyr Ser Lys Glu	
585	600
590	595
gag gac ggt tcc acc tgc ctc cac cac gca gcc aaa atc ggg aac ttg	1877
Glu Asp Gly Ser Thr Cys Leu His His Ala Ala Lys Ile Gly Asn Leu	
601	616
606	611
gag atg gtc agc ctg ctg ctg agc aca gga cag gtg gac gtc aac gcc	1925
Glu Met Val Ser Leu Leu Leu Ser Thr Gly Gln Val Asp Val Asn Ala	
617	632
622	627
cag gac agt ggg ggg tgg acg ccc atc atc tgg gct gca gag cac aag	1973
Gln Asp Ser Gly Gly Trp Thr Pro Ile Ile Trp Ala Ala Glu His Lys	
633	648
638	643
cac atc gag gtg atc cgc atg cta ctg acg cgg ggc gcc gac gtc acc	2021
His Ile Glu Val Ile Arg Met Leu Leu Thr Arg Gly Ala Asp Val Thr	

649	654	659	664	
ctc act gac aac gag	gag aac atc tgc ctg	cac tgg gcc tcc ttc acg		2069
Leu Thr Asp Asn Glu	Glu Asn Ile Cys Leu	His Trp Ala Ser Phe Thr		
665	670	675	680	
ggc agc gcc gcc atc	gcc gaa gtc ctt ctg	aat gcg cgc tgt gac ctc		2117
Gly Ser Ala Ala Ile	Ala Glu Val Leu Leu	Asn Ala Arg Cys Asp Leu		
681	686	691	696	
cat gct gtc aac tac	cat ggg gac acc ccc	ctg cac atc gca gct cgg		2165
His Ala Val Asn Tyr	His Gly Asp Thr Pro	Leu His Ile Ala Ala Arg		
697	702	707	712	
gag agc tac cat gac	tgc gtg ctg tta ttc	ctg tca cgt ggg gcc aac		2213
Glu Ser Tyr His Asp	Cys Val Leu Leu Phe	Leu Ser Arg Gly Ala Asn		
713	718	723	728	
cct gag ctg cgg aac	aaa gag ggg gac aca	gca tgg gac ctg act ccc		2261
Pro Glu Leu Arg Asn	Lys Glu Gly Asp Thr	Ala Trp Asp Leu Thr Pro		
729	734	739	744	
gag cgc tcc gac gtg	tgg ttt gcg ctt caa	ctc aac cgc aag ctc cga		2309
Glu Arg Ser Asp Val	Trp Phe Ala Leu Gln	Leu Asn Arg Lys Leu Arg		
745	750	755	760	
ctt ggg gtg gga aat	cgg gcc atc cgc aca	gag aag atc atc tgc cgg		2357
Leu Gly Val Gly Asn	Arg Ala Ile Arg Thr	Glu Lys Ile Ile Cys Arg		
761	766	771	776	
gac gtg gct cgg ggc	tat gag aac gtg ccc	att ccc tgt gtc aac ggt		2405
Asp Val Ala Arg Gly	Tyr Glu Asn Val Pro	Ile Pro Cys Val Asn Gly		
777	782	787	792	
gtg gat ggg gag ccc	tgc cct gag gat tac	aag tac atc tca gag aac		2453
Val Asp Gly Glu Pro	Cys Pro Glu Asp Tyr	Lys Tyr Ile Ser Glu Asn		
793	798	803	808	
tgc gag acg tcc acc	atg aac atc gat cgc	aac atc acc cac ctg cag		2501
Cys Glu Thr Ser Thr	Met Asn Ile Asp Arg	Asn Ile Thr His Leu Gln		
809	814	819	824	
cac tgc acg tgt gtg	gac gac tgc tct agc	tcc aac tgc ctg tgc ggc		2549
His Cys Thr Cys Val	Asp Asp Cys Ser Ser	Ser Asn Cys Leu Cys Gly		
825	830	835	840	
cag ctc agc atc cgg	tgc tgg tat gac aag	gat ggg cga ttg ctc cag		2597
Gln Leu Ser Ile Arg	Cys Trp Tyr Asp Lys	Asp Gly Arg Leu Leu Gln		
841	846	851	856	
gaa ttt aac aag att	gag cct ccg ctg att	ttc gag tgt aac cag gcg		2645
Glu Phe Asn Lys Ile	Glu Pro Pro Leu Ile	Phe Glu Cys Asn Gln Ala		
857	862	867	872	
tgc tca tgc tgg aga	aac tgc aag aac cgg	gtc gta cag agt ggc atc		2693
Cys Ser Cys Trp Arg	Asn Cys Lys Asn Arg	Val Val Gln Ser Gly Ile		
873	878	883	888	

aag gtg cgg cta cag ctc tac cga aca gcc aag atg ggc tgg ggg gtc 2741  
Lys Val Arg Leu Gln Leu Tyr Arg Thr Ala Lys Met Gly Trp Gly Val  
889 894 899 904  
cgc gcc ctg cag acc atc cca cag ggg acc ttc atc tgc gag tat gtc 2789  
Arg Ala Leu Gln Thr Ile Pro Gln Gly Thr Phe Ile Cys Glu Tyr Val  
905 910 915 920  
ggg gag ctg atc tct gat gct gag gct gat gtg aga gag gat gat tct 2837  
Gly Glu Leu Ile Ser Asp Ala Glu Ala Asp Val Arg Glu Asp Asp Ser  
921 926 931 936  
tac ctc ttc gac tta gac aac aag gat gga gag gtg tac tgc ata gat 2885  
Tyr Leu Phe Asp Leu Asp Asn Lys Asp Gly Glu Val Tyr Cys Ile Asp  
937 942 947 952  
gcc cgt tac tat ggc aac atc agc cgc ctc ctc tgc cac ctg tgt gac 2933  
Ala Arg Tyr Tyr Gly Asn Ile Ser Arg Leu Leu Cys His Leu Cys Asp  
953 958 963 968  
ccc aac atc att ccc gtc cgg gtc ttc atg ctg cac caa gac ctg cga 2981  
Pro Asn Ile Ile Pro Val Arg Val Phe Met Leu His Gln Asp Leu Arg  
969 974 979 984  
ttt cca cgc atc gcc ttc ttc agt tcc cga gac atc cgg act ggg gag 3029  
Phe Pro Arg Ile Ala Phe Phe Ser Ser Arg Asp Ile Arg Thr Gly Glu  
985 990 995 1000  
gag cta ggg ttt gac tat ggc gac cgc ttc tgg gac atc aaa agc aaa 3077  
Glu Leu Gly Phe Asp Tyr Gly Asp Arg Phe Trp Asp Ile Lys Ser Lys  
1001 1006 1011 1016  
tat ttc acc tgc caa tgt ggc tct gag aag tgc aag cac tca gcc gaa 3125  
Tyr Phe Thr Cys Gln Cys Gly Ser Glu Lys Cys Lys His Ser Ala Glu  
1017 1022 1027 1032  
gcc att gcc ctg gag cag agc cgt ctg gcc cgc ctg gac cca cac cct 3173  
Ala Ile Ala Leu Glu Gln Ser Arg Leu Ala Arg Leu Asp Pro His Pro  
1033 1038 1043 1048  
gag ctg ctg ccc gag ctc ggc tcc ctg ccc cct gtc aac aca tga gaa 3221  
Glu Leu Leu Pro Glu Leu Gly Ser Leu Pro Pro Val Asn Thr \*  
1049 1054 1059  
cggaccacac cctctctccc cagcatggat ggccacagct cagccgcctc ctctgccacc 3281  
agctgctcgc agcccatgcc tgggggtgct gccatcttct cccccacca ccttttcaca 3341  
cattcctgac cagagatccc agccaggccc tggaggtctg acagcccctc cctcccagag 3401  
ctggttcctc cctgggaggg caacttcagg gctggccacc ccccggtgtc cccatcctca 3461  
gttgaagttt gatgaattga agtcgggcct ctatgccaac tggttccttt tgttctcaat 3521  
aaatgttggg tttggtaata aaaaaaaaaa a 3552

<210> 70  
 <211> 1925  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (510)..(1562)

<220>  
 <221> misc\_feature  
 <222> (1)...(1925)  
 <223> n = a,t,c or g

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 ccatacctctc cctccccctc tccgggttcc cccaccacaca ggagccttgg gccgaccact 120  
 cccccgatgg cctcagccac ggaggaccccc gttctggagc gttatttcaa aggccacaaa 180  
 gctgcgatca cctccttggga cctcagcccc aacggcaagc aacttgctac tgcttcttgg 240  
 gatacctttc tcatgctatg gaatttcaag ccacatgcta gagcttacag atatgtgggt 300  
 cacaaggatg ttgtaaccag cgtgcagttt tctccacatg gaaacttatt ggcgtctgcc 360  
 tcacgagaca gaaccgtgag actctggatt cctgataaga gaggaaaatt ctcagaattt 420  
 aaagctcata cagctccagt tcgaagtgta gacttttcag ctgatggcca gtttctagct 480  
 acagcttctg aagacaaatc cataaaagt atg gag cat gta tcg cca gcg ctt 533  
 Met Glu His Val Ser Pro Ala Leu  
 1 5  
 cct gta ttc ctt gta tcg aca tac aca ctg ggt acg ctg tgc cca att 581  
 Pro Val Phe Leu Val Ser Thr Tyr Thr Leu Gly Thr Leu Cys Pro Ile  
 9 14 19 24  
 tca ccc gat gga aga cta att gtg tca tgt agt gag gat aaa act att 629  
 Ser Pro Asp Gly Arg Leu Ile Val Ser Cys Ser Glu Asp Lys Thr Ile  
 25 30 35 40  
 aaa att tgg gat acc aca aat aag caa tgt gtt aat aac ttc tca gat 677  
 Lys Ile Trp Asp Thr Thr Asn Lys Gln Cys Val Asn Asn Phe Ser Asp  
 41 46 51 56  
 tcc gtt gga ttt gca aat ttt gtg gac ttt aac cct agt ggt aca tgc 725  
 Ser Val Gly Phe Ala Asn Phe Val Asp Phe Asn Pro Ser Gly Thr Cys  
 57 62 67 72  
 ata gct tca gca ggt tct gat caa act gtg aaa gtc tgg gat gta aga 773  
 Ile Ala Ser Ala Gly Ser Asp Gln Thr Val Lys Val Trp Asp Val Arg  
 73 78 83 88

gtg aac aaa tta cta cag cat tac caa gtt cac agc ggt gga gtt aat	821
Val Asn Lys Leu Leu Gln His Tyr Gln Val His Ser Gly Gly Val Asn	
89 94 99 104	
tgc ata tca ttc cat cct tcg ggt aac tat ctc atc aca gct tct tca	869
Cys Ile Ser Phe His Pro Ser Gly Asn Tyr Leu Ile Thr Ala Ser Ser	
105 110 115 120	
gat ggt acc ctt aag att ctg gac ctc tta gaa gga agg ctc atc tat	917
Asp Gly Thr Leu Lys Ile Leu Asp Leu Leu Glu Gly Arg Leu Ile Tyr	
121 126 131 136	
aca ctt caa gga cat acg gga cct gtc ttt act gtt tca ttt tca aaa	965
Thr Leu Gln Gly His Thr Gly Pro Val Phe Thr Val Ser Phe Ser Lys	
137 142 147 152	
ggg gga gag cta ttt gca tca gga ggt gca gac aca cag gtc tta tta	1013
Gly Gly Glu Leu Phe Ala Ser Gly Gly Ala Asp Thr Gln Val Leu Leu	
153 158 163 168	
tgg agg act aac ttt gat gaa ttg cat tgt aaa ggt ctt acc aaa aga	1061
Trp Arg Thr Asn Phe Asp Glu Leu His Cys Lys Gly Leu Thr Lys Arg	
169 174 179 184	
aat ctc aaa aga tta cat ttt gat tca cca cca cat ctt ctt gat atc	1109
Asn Leu Lys Arg Leu His Phe Asp Ser Pro Pro His Leu Leu Asp Ile	
185 190 195 200	
tac cca aga aca cca cat ccc cat gag gaa aaa gtt gag act gta gaa	1157
Tyr Pro Arg Thr Pro His Pro His Glu Glu Lys Val Glu Thr Val Glu	
201 206 211 216	
att aat cca aag ctt gag gta atc gat ttg cag atc tct act ccc cct	1205
Ile Asn Pro Lys Leu Glu Val Ile Asp Leu Gln Ile Ser Thr Pro Pro	
217 222 227 232	
gtt atg gat atc ctt tct ttt gat tct acc aca aca aca gaa acc agt	1253
Val Met Asp Ile Leu Ser Phe Asp Ser Thr Thr Thr Thr Glu Thr Ser	
233 238 243 248	
ggg agg act ctg cca gac aag ggt gaa gag gcc tgt gga tat ttc ttg	1301
Gly Arg Thr Leu Pro Asp Lys Gly Glu Glu Ala Cys Gly Tyr Phe Leu	
249 254 259 264	
aac cct tcc tta atg tca cca gaa tgt ttg cca aca acc acg aaa aag	1349
Asn Pro Ser Leu Met Ser Pro Glu Cys Leu Pro Thr Thr Thr Lys Lys	
265 270 275 280	
aaa aca gaa gac atg agt gac ctc ccc tgt gaa agt caa agg agc ata	1397
Lys Thr Glu Asp Met Ser Asp Leu Pro Cys Glu Ser Gln Arg Ser Ile	
281 286 291 296	
cct ctc gct gtg act gat gct tta gag cat att atg gaa caa ctc aat	1445
Pro Leu Ala Val Thr Asp Ala Leu Glu His Ile Met Glu Gln Leu Asn	
297 302 307 312	

gtt ttg aca cag act gtt tca atc ttg gag cag cga ctg act ttg aca 1493  
 Val Leu Thr Gln Thr Val Ser Ile Leu Glu Gln Arg Leu Thr Leu Thr  
 313 318 323 328

gag gat aag ctg aaa gac tgc ctt gaa aat cag caa aag ctt ttc agt 1541  
 Glu Asp Lys Leu Lys Asp Cys Leu Glu Asn Gln Gln Lys Leu Phe Ser  
 329 334 339 344

gct gtc caa cag aaa agc tga at aaaaaattca ttttcatttg ttgggcagag 1594  
 Ala Val Gln Gln Lys Ser \*  
 345 350

gccaataaaa tgaacaaatg tacatacact caggaaggta gtacaagata ctccatacaa 1654

cacaaccatg tgctatttat catggcattt cttaaaaggg tgagcaacag aacaaaaggc 1714

agaaaaggca tacctaagga ctaatttaaa cacatatcaa tgtgaaggac taattttaaat 1774

tactatcatt tatgattgca gtaataaagt gataagcatt caagcaactc tgtatttttcc 1834

ccatattaat ttaaatgtcc attntcattt ataggccana tcctgccaaag aaaagaaccc 1894

agatctctgg atttcaactgt taagtcattt a 1925

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 <212> DNA  
 <213> Homo sapiens

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 <222> (484) .. (837)

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 tggcgctttg gagaaaccaa ccaagacccc ggggggggggt tgggccccaa tectaattac 180  
 ctttctgtcc ccaacttcca gttagccaaa atataaagaa ggcaaactct gtactgttgg 240  
 caaaaacagc caccctaaag ttgttaaaaa gcaaaacaaa acacctcaag cttaaatttt 300  
 tgaaaaacaa tcctcacaca aagatactat caacaaatca cacaccaatt tatcttagaa 360  
 ggatcaagag atgaaaaaca gcaaaggata ttttcgtaat atgctagaat ctttgaatat 420  
 aatactgaag ttggcaacca aaagcaattc agaagttcaa cttagaacta atggctgtat 480  
 ccg atg gca ctg tct att tta gat att aaa atg tca cca tct tgg tat 528  
 Met Ala Leu Ser Ile Leu Asp Ile Lys Met Ser Pro Ser Trp Tyr  
 1 5 10

ttt cac atg gct ata ggc att ata aac tgg aac act act gcg ggt tta	576
Phe His Met Ala Ile Gly Ile Ile Asn Trp Asn Thr Thr Ala Gly Leu	
16 21 26 31	

tct ggc act ctg tat cca aaa gtc ccc caa aag tac ata ctc ttt gac	624
Ser Gly Thr Leu Tyr Pro Lys Val Pro Gln Lys Tyr Ile Leu Phe Asp	
32 37 42 47	

tct gta att ctg ctt cta ggc atg tta aga aaa ata cgt cag gta tgc	672
Ser Val Ile Leu Leu Leu Gly Met Leu Arg Lys Ile Arg Gln Val Cys	
48 53 58 63	

caa aat gta tac atg aaa ggg tgt tca cca ata aca tta ttt aaa ata	720
Gln Asn Val Tyr Met Lys Gly Cys Ser Pro Ile Thr Leu Phe Lys Ile	
64 69 74 79	

gtt cac tac tgg cca ggc gca gta gct cat gcc tat aat cct agc act	768
Val His Tyr Trp Pro Gly Ala Val Ala His Ala Tyr Asn Pro Ser Thr	
80 85 90 95	

ttg gga ggc caa gtt ggg ggc aaa tca cct gag gtc agg agt tcg aga	816
Leu Gly Gly Gln Val Gly Gly Lys Ser Pro Glu Val Arg Ser Ser Arg	
96 101 106 111	

cca gcc tgg act aca tgg tga aa ccccatctct actaaaagaa caaaaattag	869
Pro Ala Trp Thr Thr Trp *	
112 117	

gtcgacgcgg ccgcgaattc ggatcctcga gagatctott tttttggggtt tgggtggggta	929
tcttcacgtcga cgaatcggtta gttatat	956

<210> 72  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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gctgaagcca gagatccact caaaagagca gatactggaa ctgctgggtgc tggagcagtt	180
cctgactatt ctgcccaggg agacacagac ccag atg cag aag cac cat cca	232
Met Gln Lys His His Pro	
1	
cag agc att gag gag gct gtg gct ctg gta gaa cac ttg cag agg gaa	280
Gln Ser Ile Glu Glu Ala Val Ala Leu Val Glu His Leu Gln Arg Glu	

7	12	17	22	
tct ggt caa aca tgg aat ggg gtt gca gtc	cat gag ctg gga aag gag	328		
Ser Gly Gln Thr Trp Asn Gly Val Ala Val	His Glu Leu Gly Lys Glu			
23 28 33 38				
gca gtg ctc ttg gga gaa aca gca gag gcc tca agt ttc ggg ctg aag	376			
Ala Val Leu Leu Gly Glu Thr Ala Glu Ala Ser Ser Phe Gly Leu Lys				
39 44 49 54				
cca aca gag tcc caa cca gtg ggc gta tcc caa gat gaa gaa ttt tgg	424			
Pro Thr Glu Ser Gln Pro Val Gly Val Ser Gln Asp Glu Glu Phe Trp				
55 60 65 70				
aat aca tac gag ggt ctg caa gaa cag ctc agc agg aat act cat aaa	472			
Asn Thr Tyr Glu Gly Leu Gln Glu Gln Leu Ser Arg Asn Thr His Lys				
71 76 81 86				
gag act gag cct gtg tat gag agg gct gtg cct act caa cag att cta	520			
Glu Thr Glu Pro Val Tyr Glu Arg Ala Val Pro Thr Gln Gln Ile Leu				
87 92 97 102				
gct ttt cct gag caa aca aac acc aaa gac tgg aca gtg aca cct gag	568			
Ala Phe Pro Glu Gln Thr Asn Thr Lys Asp Trp Thr Val Thr Pro Glu				
103 108 113 118				
cac gtc ttg cct gag tcc cag agc ttg ttg aca ttt gaa gaa gtg gcc	616			
His Val Leu Pro Glu Ser Gln Ser Leu Leu Thr Phe Glu Glu Val Ala				
119 124 129 134				
atg tat ttt tcc cag gaa gaa tgg gag tta ttg gat ccc act cag aag	664			
Met Tyr Phe Ser Gln Glu Glu Trp Glu Leu Leu Asp Pro Thr Gln Lys				
135 140 145 150				
gcc ctc tac aat gat gta atg cag gaa aac tat gag act gtc atc tct	712			
Ala Leu Tyr Asn Asp Val Met Gln Glu Asn Tyr Glu Thr Val Ile Ser				
151 156 161 166				
cta gca ttg ttt gtg ctc ccc aaa cct aaa gtg atc tcc tgt cta gag	760			
Leu Ala Leu Phe Val Leu Pro Lys Pro Lys Val Ile Ser Cys Leu Glu				
167 172 177 182				
caa ggg gaa gag cca tgg gtt caa gta tcc ccg gag ttt aag gat agt	808			
Gln Gly Glu Glu Pro Trp Val Gln Val Ser Pro Glu Phe Lys Asp Ser				
183 188 193 198				
gcc gga aaa tct cct aca ggg tta aag ctc aaa aac gac act gaa aat	856			
Ala Gly Lys Ser Pro Thr Gly Leu Lys Leu Lys Asn Asp Thr Glu Asn				
199 204 209 214				
cat cag cct gcg tct ctt tct gac tta gaa ata caa gca tca gca ggc	904			
His Gln Pro Ala Ser Leu Ser Asp Leu Glu Ile Gln Ala Ser Ala Gly				
215 220 225 230				
gtc ata tca aaa aag gcc aaa gta aaa gtt ccc cag aaa aca gca ggc	952			
Val Ile Ser Lys Lys Ala Lys Val Lys Val Pro Gln Lys Thr Ala Gly				
231 236 241 246				



aaa gaa aat cat ttt gat atg cac aga gtg gga aaa tgg cac caa gat	1000
Lys Glu Asn His Phe Asp Met His Arg Val Gly Lys Trp His Gln Asp	
247 252 257 262	
ttt cca gtg aag aaa aga aag aaa ctt tca acc tgg aaa caa gag ctg	1048
Phe Pro Val Lys Lys Arg Lys Lys Leu Ser Thr Trp Lys Gln Glu Leu	
263 268 273 278	
ctc aaa ctt atg gat cgt cac aag aaa gat tgt gca aga gag aag cct	1096
Leu Lys Leu Met Asp Arg His Lys Lys Asp Cys Ala Arg Glu Lys Pro	
279 284 289 294	
ttt aaa tgt cag gaa tgt ggg aaa acc ttc aga gtt agc tct gac ctt	1144
Phe Lys Cys Gln Glu Cys Gly Lys Thr Phe Arg Val Ser Ser Asp Leu	
295 300 305 310	
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Ile Lys His Gln Arg Ile His Thr Glu Glu Lys Pro Tyr Lys Cys Gln	
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Gln Cys Asp Lys Arg Phe Arg Trp Ser Ser Asp Leu Asn Lys His Leu	
327 332 337 342	
aca aca cac caa gga ata aaa cca tat aaa tgt tca tgg tgt ggg aaa	1288
Thr Thr His Gln Gly Ile Lys Pro Tyr Lys Cys Ser Trp Cys Gly Lys	
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Ser Phe Ser Gln Asn Thr Asn Leu His Thr His Gln Arg Thr His Thr	
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Gly Glu Lys Pro Phe Thr Cys His Glu Cys Gly Lys Lys Phe Ser Gln	
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Asn Ser His Leu Ile Lys His Arg Arg Thr His Thr Gly Glu Gln Pro	
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Tyr Thr Cys Ser Ile Cys Arg Arg Asn Phe Ser Arg Arg Ser Ser Leu	
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Leu Arg His Gln Lys Leu His Leu *	
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Pro Gly Val Gly Asp Ser Glu Gly Gly Pro Arg Pro Leu Phe Cys Arg						
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Lys Gly Ala Leu Arg Gln Lys Val Val His Glu Val Lys Ser His Lys						
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Phe Thr Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His Cys Thr						
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Pro Gly Ala Gly Lys Gly Pro Gln Thr Asp Asp Pro Arg Asn Lys His						
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Lys Phe Arg Leu His Ser Tyr Ser Ser Pro Thr Phe Cys Asp His Cys						
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Gly Ser Leu Leu Tyr Gly Leu Val His Gln Gly Met Lys Cys Ser Cys						
118 123 128 133						
tgc gag atg aac gtg cac cgg cgc tgt gtg cgt agc gtg ccc tcc ctg						667
Cys Glu Met Asn Val His Arg Arg Cys Val Arg Ser Val Pro Ser Leu						
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Cys Gly Val Asp His Thr Glu Arg Arg Gly Arg Leu Gln Leu Glu Ile						

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Arg Ala Pro Thr Ala Asp Glu Ile His Val Thr Val Gly Glu Ala Arg				
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Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser Asp Pro Tyr Val Lys				
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Leu Lys Leu Ile Pro Asp Pro Arg Asn Leu Thr Lys Gln Lys Thr Arg				
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Thr Val Lys Ala Thr Leu Asn Pro Val Trp Asn Glu Thr Phe Val Phe				
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Asn Leu Lys Pro Gly Asp Val Glu Arg Arg Leu Ser Val Glu Val Trp				
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Asp Trp Asp Arg Thr Ser Arg Asn Asp Phe Met Gly Ala Met Ser Phe				
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Gly Val Ser Glu Leu Leu Lys Ala Pro Val Asp Gly Trp Tyr Lys Leu				
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Leu Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val Pro Val Ala Asp Ala				
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Asp Asn Cys Ser Leu Leu Gln Lys Phe Glu Ala Cys Asn Tyr Pro Leu				
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Glu Leu Tyr Glu Arg Val Arg Met Gly Pro Ser Ser Ser Pro Ile Pro				
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Ser Pro Ser Pro Ser Pro Thr Asp Pro Lys Arg Cys Phe Phe Gly Ala				
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Ser Pro Gly Arg Leu His Ile Ser Asp Phe Ser Phe Leu Met Val Leu				
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Gly Lys Gly Ser Phe Gly Lys Val Met Leu Ala Glu Arg Arg Gly Ser				
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Asp Glu Leu Tyr Ala Ile Lys Ile Leu Lys Lys Asp Val Ile Val Gln				
374	379	384	389	

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Asp Asp Asp Val Asp Cys Thr Leu Val Glu Lys Arg Val Leu Ala Leu	
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Phe Leu His Asn Gln Gly Ile Ile Tyr Arg Asp Leu Lys Leu Asp Asn	
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Val Met Leu Asp Ala Glu Gly His Ile Lys Ile Thr Asp Phe Gly Met	
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Cys Lys Glu Asn Val Phe Pro Gly Thr Thr Thr Arg Thr Phe Cys Gly	
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Ala Val Ala Ile Cys Lys Gly Phe Leu Thr Lys His Pro Gly Lys Arg	
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Val Pro Val Met *	
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Thr Phe Ile Ile Gly Ile Ser Gly Val Thr Asn Ser Gly Lys Thr Thr  
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67 72 77 82  
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Ser Thr Asp Gln Glu Ser Ala Glu Glu Ile Pro Ile Leu Ile Ile Glu  
83 88 93 98  
ggg ttt ctt ctt ttt aat tat aag ccc ctt gac act ata tgg aat aga 632

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99					104					109					114	
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Ser	Tyr	Phe	Leu	Thr	Ile	Pro	Tyr	Glu	Glu	Cys	Lys	Arg	Arg	Arg	Ser	
115					120					125					130	
aca	agg	gtc	tat	cag	cct	cca	gac	tct	ccg	gga	tac	ttt	gat	ggc	cat	728
Thr	Arg	Val	Tyr	Gln	Pro	Pro	Asp	Ser	Pro	Gly	Tyr	Phe	Asp	Gly	His	
131					136					141					146	
gtg	tgg	ccc	atg	tat	cta	aag	tac	aga	caa	gaa	atg	cag	gac	atc	aca	776
Val	Trp	Pro	Met	Tyr	Leu	Lys	Tyr	Arg	Gln	Glu	Met	Gln	Asp	Ile	Thr	
147					152					157					162	
tgg	gaa	gtt	gtg	tac	ctg	gat	gga	aca	aaa	tct	gaa	gag	gac	ctc	ttt	824
Trp	Glu	Val	Val	Tyr	Leu	Asp	Gly	Thr	Lys	Ser	Glu	Glu	Asp	Leu	Phe	
163					168					173					178	
ttg	caa	gta	tat	gaa	gat	cta	ata	caa	gaa	cta	gca	aag	caa	aag	tgt	872
Leu	Gln	Val	Tyr	Glu	Asp	Leu	Ile	Gln	Glu	Leu	Ala	Lys	Gln	Lys	Cys	
179					184					189					194	
ttg	caa	gtg	aca	gca	taa	agacgg	aacacaacaa	atccttcctg	aagtgaatta							926
Leu	Gln	Val	Thr	Ala	*											
195					200											
ggaaactcca	aggagtaatt	taagaacott	caccaagata	caatgtatac	tgtggtacaa											986
tgacagccat	tgtttcatat	gtttgatttt	tattgcacat	ggttttccca	acatgtggaa											1046
caataaatat	ccatgccaat	ggacaggact	gtaccttagc	aagttgctcc	ctctccaggg											1106
agcgcataga	tacagcagag	ctcacagtga	gtcagaaagt	ctccactttc	tgaacatagc											1166
tctataacaa	tgattgtcaa	actttttctaa	ctggagctca	gagtaagaaa	taaagattac											1226
atcacatcc	aaaaaaaaaa	aa														1248

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 <212> DNA  
 <213> Homo sapiens

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aaccaggag	gagcgtgggg aaaggggctg tgggcctctc ggggagcgag ctgcgggtag 180

cggcgcactg ggtacaggcg cgcgcttggc tgtcgctctt gccgctgtgt ttgggaggac	240
tcgaactggc gccaggaaat attaggaagc tgtgattttc aaagctaatt atg aaa	296
Met Lys	
1	
aca ttt atc att gga atc agt ggt gtg aca aac agt ggc aaa aca aca	344
Thr Phe Ile Ile Gly Ile Ser Gly Val Thr Asn Ser Gly Lys Thr Thr	
3 8 13 18	
ctg gct aag aat ttg cag aaa cac ctc cca aat tgc agt gtc ata tct	392
Leu Ala Lys Asn Leu Gln Lys His Leu Pro Asn Cys Ser Val Ile Ser	
19 24 29 34	
cag gat gat ttc ttc aag cca gag tct gag ata gag aca gat aaa aat	440
Gln Asp Asp Phe Phe Lys Pro Glu Ser Glu Ile Glu Thr Asp Lys Asn	
35 40 45 50	
gga ttt ttg cag tac gat gtg ctt gaa gca ctt aac atg gaa aaa atg	488
Gly Phe Leu Gln Tyr Asp Val Leu Glu Ala Leu Asn Met Glu Lys Met	
51 56 61 66	
atg tca gcc att tcc tgc tgg atg gaa agc gca aga cac tct gtg gta	536
Met Ser Ala Ile Ser Cys Trp Met Glu Ser Ala Arg His Ser Val Val	
67 72 77 82	
tca aca gac cag gaa agt gct gag gaa att ccc att tta atc atc gaa	584
Ser Thr Asp Gln Glu Ser Ala Glu Glu Ile Pro Ile Leu Ile Ile Glu	
83 88 93 98	
ggt ttt ctt ctt ttt aat tat aat aca agg gtc tat cag cct cca gac	632
Gly Phe Leu Leu Phe Asn Tyr Asn Thr Arg Val Tyr Gln Pro Pro Asp	
99 104 109 114	
tct ccg gga tac ttt gat ggc cat gtg tgg ccc atg tat cta aag tac	680
Ser Pro Gly Tyr Phe Asp Gly His Val Trp Pro Met Tyr Leu Lys Tyr	
115 120 125 130	
aga caa gaa atg cag gac atc aca tgg gaa gtt gtg tac ctg gat gga	728
Arg Gln Glu Met Gln Asp Ile Thr Trp Glu Val Val Tyr Leu Asp Gly	
131 136 141 146	
aca aaa tct gaa gag gac ctc ttt ttg caa gta tat gaa gat cta ata	776
Thr Lys Ser Glu Glu Asp Leu Phe Leu Gln Val Tyr Glu Asp Leu Ile	
147 152 157 162	
caa gaa cta gca aag caa aag tgt ttg caa gtg aca gca taa agacgga	825
Gln Glu Leu Ala Lys Gln Lys Cys Leu Gln Val Thr Ala *	
163 168 173	
acacaacaaa tccttcctga agtgaattag gaaactccaa ggagtaattt aagaaccttc	885
accaagatac aatgtatact gtggtacaat gacagccatt gtttcatatg tttgattttt	945
attgcacatg gttttcccaa catgtggaac aataaatatc catgccaatg gacaggactg	1005

taccttagca agttgctccc tctccagga ggcacatagat acagcagagc tcacagttag 1065  
 tcagaaagtc tccactttct gaacatagct ctataacaat gattgtcaaa ctttttctaac 1125  
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<210> 77  
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 <222> (669)..(1145)

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 tttctgttaa caactgctct gaaaagaaga tatttttcaa cctgaacttg cagtagctag 180  
 tggagaggca ggaaaaagga aatgaaacag agacagaggg aagcctgagc caaaatagac 240  
 ctccccgaga gaggaggaag cccggagaga gacgcacggt cccctccccg cccctaggcc 300  
 gccgccccct ctctgccctc ggcgggcagc agggcgccgc gaccgggggc cggaaaggtg 360  
 ccaggggctc cgggcggccg ggcgggcgca caccatcccc gcggggcgcg cggagccggc 420  
 gacagcgcg cagagggacc ggcggttggc ggcgggcgga ccgggatgga agggagcgcg 480  
 gtgactgtcc ttgagcgcg agggcgagc tcgcggcgcg agggcgagca agcgagggca 540  
 ggagcgcgcg cgacggcggc ggcgggcgcg gcgcgcgagc acccgagggg gtccgagccc 600  
 cggcagccgg ccagccccgc gccacaaagg gagcgcccc gccgcgggc acccgccctc 660  
 ccttccca atg tcc tcg gcc atc gaa agg aag agc ctg gac cct tca gag 710  
 Met Ser Ser Ala Ile Glu Arg Lys Ser Leu Asp Pro Ser Glu  
 1 5 10  
 gaa cca gtg gat gag gtg ctg cag atc ccc cca tcc ctg ctg aca tgc 758  
 Glu Pro Val Asp Glu Val Leu Gln Ile Pro Pro Ser Leu Leu Thr Cys  
 15 20 25 30  
 ggc ggc tgc cag cag aac atc ggg gac cgc tac ttc ctg aag gcc atc 806  
 Gly Gly Cys Gln Gln Asn Ile Gly Asp Arg Tyr Phe Leu Lys Ala Ile  
 31 36 41 46  
 gac cag tac tgg cac gag gac tgc ctg agc tgc gac ctc tgt ggc tgc 854  
 Asp Gln Tyr Trp His Glu Asp Cys Leu Ser Cys Asp Leu Cys Gly Cys  
 47 52 57 62

cgg ctg ggt gag gtg ggg cgg cgc ctc tac tac aaa ctg ggc cgg aag	902
Arg Leu Gly Glu Val Gly Arg Arg Leu Tyr Tyr Lys Leu Gly Arg Lys	
63 68 73 78	
ctc tgc cgg aga gac tat ctc agg ctt ttt ggg caa gac ggt ctc tgc	950
Leu Cys Arg Arg Asp Tyr Leu Arg Leu Phe Gly Gln Asp Gly Leu Cys	
79 84 89 94	
gca tcc tgt gac aag cgg att cgt gcc tat gag atg aca atg cgg gtg	998
Ala Ser Cys Asp Lys Arg Ile Arg Ala Tyr Glu Met Thr Met Arg Val	
95 100 105 110	
aaa gac aaa gtg tat cac ctg gaa tgt ttc aag tgc gcc gcc tgt cag	1046
Lys Asp Lys Val Tyr His Leu Glu Cys Phe Lys Cys Ala Ala Cys Gln	
111 116 121 126	
aag cat ttc tgt gta ggt gac aga tac ctc ctc atc aac tct gac ata	1094
Lys His Phe Cys Val Gly Asp Arg Tyr Leu Ile Asn Ser Asp Ile	
127 132 137 142	
gtg tgc gaa cag gac atc tac gag tgg act aag atc aat ggg atg ata	1142
Val Cys Glu Gln Asp Ile Tyr Glu Trp Thr Lys Ile Asn Gly Met Ile	
143 148 153 158	
tag gccc gagtccccgg gcatctttgg ggaggtgttc actgaagacg ccgtctccat	1199
* 159	
ggcatcttcg tcttcactct taggcacttt gggggtttga ggggtggggta agggatttct	1259
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ggctgacact tcaaggtgac agaaggacca gcccttgagg gagaacttat ggccacagcc	1379
catccatagt aactgacatg attagcagaa gaaaggaaca tttaggggca agcaggcgct	1439
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atgctgatga atcactgttt ttagacacct tcattttgag gggaggagtt ccacagattg	1799
tttctatata aatataaatc ttaaaaagtt gttcaactat tttattatcc tagattatat	1859
caaagtatgt gtcgtgtgta gaaaaaaaa acagctctgc aggttaata aaaatgacag	1919
actgaaaaaa aaaaaaaaaa	1939

<210> 78  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (134)..(517)

<220>  
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 <222> (1)...(985)  
 <223> n = a,t,c or g

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 ggggccccag gag atg ttg acc cag cag ggc atg gcg ctg cag aac tac 169  
 Met Leu Thr Gln Gln Gly Met Ala Leu Gln Asn Tyr  
 1 5 10  
 gac aac aag ctg gtc aaa tgc ata gag gag cta tgc cag aag cag gag 217  
 Asp Asn Lys Leu Val Lys Cys Ile Glu Glu Leu Cys Gln Lys Gln Glu  
 13 18 23 28  
 gag ctg tgc tgg cag atc cag cag gag gag gac aag aaa cag cgg ctg 265  
 Glu Leu Cys Trp Gln Ile Gln Gln Glu Glu Asp Lys Lys Gln Arg Leu  
 29 34 39 44  
 cag aat gag gtg agg cag ctg aca gag aag ctg gcc tgc gtc aac gag 313  
 Gln Asn Glu Val Arg Gln Leu Thr Glu Lys Leu Ala Cys Val Asn Glu  
 45 50 55 60  
 aag ctg gcc cgc gtc aac gag aac ctg gca cgc aag att gcc tct tgc 361  
 Lys Leu Ala Arg Val Asn Glu Asn Leu Ala Arg Lys Ile Ala Ser Cys  
 61 66 71 76  
 agt aag ttc tac cag acc atc gcg gag acg gag gcc gcc tac ctc aag 409  
 Ser Lys Phe Tyr Gln Thr Ile Ala Glu Thr Glu Ala Ala Tyr Leu Lys  
 77 82 87 92  
 atc ctg gag agc tcc cag act ttg ctc agc gtt ctc aag agg gaa gct 457  
 Ile Leu Glu Ser Ser Gln Thr Leu Leu Ser Val Leu Lys Arg Glu Ala  
 93 98 103 108  
 ggg aac ctg acc aag gct aca gcc cca gac cag aaa agt agc ggc ggc 505  
 Gly Asn Leu Thr Lys Ala Thr Ala Pro Asp Gln Lys Ser Ser Gly Gly  
 109 114 119 124  
 agg gac agc tga cca gaccacaggc agggcctgcc tccgtgtgcc cctcagctca 560  
 Arg Asp Ser \*  
 125  
 gccccagcaa gtgtgtgctc agagcatctt tgtttcttcac ggcagcagct accttcctc 620

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actgtctcag gtgccgagag gggcaggtgc cagcctccac tggcatcagt gacaagccca 680
gggcacagcc caccggggg tctctgcttc atgtcacac aggtatggg gatggtgggc 740
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aggcccaggg caagggacag gaggacaggg gttctccttc accacagaac ccaaacctca 920
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aaaaa 985

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<210> 79
<211> 1730
<212> DNA
<213> Homo sapiens

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<222> (466) .. (990)

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ctggcctaaa cccgacgcta ggctggaggg agcgactgcg ggccgggctg gcggggactg 180
gggcctcggt gtgggttcgtg ggggggctgg ggctgcttta cgccctgagg atccctttga 240
ggctgtgtga gaatttggca gggggcttat cttgagtaat aaaatagtac aggaagttag 300
agcgccacaa acaacagtgg gtttgctagt tctttcgacg tctgtagaac acttgctacg 360
tattctgtgc tgacaatacg aacacatata ttggaatggt ggtacttcca taagcatggc 420
acatctttta ttgagcaagt atctgtaagc catttgcaac cactg atg gga gga 474
Met Gly Gly
1

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aca gag agc agc att tca gaa cca ggt tct cct tcg agg aac aga gaa 522
Thr Glu Ser Ser Ile Ser Glu Pro Gly Ser Pro Ser Arg Asn Arg Glu
4 9 14 19

aat gaa acc agc aga cag aat ttg tca gaa tgt aag gta tgg aga aac 570
Asn Glu Thr Ser Arg Gln Asn Leu Ser Glu Cys Lys Val Trp Arg Asn
20 25 30 35

cct cta aat ctt ttc aga gga gca gaa tat agg aga tac act tgg gtg 618
Pro Leu Asn Leu Phe Arg Gly Ala Glu Tyr Arg Arg Tyr Thr Trp Val
36 41 46 51

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act ggt aaa gag cca ctt aca tac tat gac atg aac ctg tca gct cag	666
Thr Gly Lys Glu Pro Leu Thr Tyr Tyr Asp Met Asn Leu Ser Ala Gln	
52 57 62 67	
gac cat cag acc ttt ttc acc tgt gac aca gat ttt tta cgt cct tca	714
Asp His Gln Thr Phe Phe Thr Cys Asp Thr Asp Phe Leu Arg Pro Ser	
68 73 78 83	
gac aca gtt atg cag aag gct tgg agg gaa aga aat cct cca gct cga	762
Asp Thr Val Met Gln Lys Ala Trp Arg Glu Arg Asn Pro Pro Ala Arg	
84 89 94 99	
atc aaa gca gcc tat caa gct tta gaa tta aac aat gac tgt gcc act	810
Ile Lys Ala Ala Tyr Gln Ala Leu Glu Leu Asn Asn Asp Cys Ala Thr	
100 105 110 115	
gca tat gtt cta ctg gct gag gaa gaa gca aca act att gta gat gct	858
Ala Tyr Val Leu Leu Ala Glu Glu Glu Ala Thr Thr Ile Val Asp Ala	
116 121 126 131	
gaa agg tta ttt aaa cag gca ctc aag gca gga gaa aca att tat agg	906
Glu Arg Leu Phe Lys Gln Ala Leu Lys Ala Gly Glu Thr Ile Tyr Arg	
132 137 142 147	
cag tca cag cag tgc cag cac caa agt cct cag cat gaa gct caa ctg	954
Gln Ser Gln Gln Cys Gln His Gln Ser Pro Gln His Glu Ala Gln Leu	
148 153 158 163	
agg aga gat acc aat gta ctg gta tat att aat tga agat tggcaatgtg	1004
Arg Arg Asp Thr Asn Val Leu Val Tyr Ile Asn *	
164 169 174	
tgcaagaaaa ttaggaagaa taagagaagc agtaaaaata atgagagatt tgatgaaaga	1064
atttctctct cttacatgt tgaacatcca tgaaaatctc ttagaatcac ttttatgaat	1124
tacaggccta tccagatggt caggcagtc tagcaaaaata tgatgatata agccttccaa	1184
agtcagcagc aatctgttac acagcagcac tgttgaagac aaggactgtt tcagaaaaat	1244
tctctccaga aacagcctcc agaagaggat taagcacagc agaaattaat gccgtggaag	1304
caattcatag agctgtggaa tttaatcctc atgttccaaa atatttatta gagatgaaaa	1364
gtttaatttt acctccagaa cacattctga aacgggggtga tagtgaagca attgcctatg	1424
ctttctttca tcttcagcac tggaaacgaa tagaaggtgc tcttaatctg ttacagtgtg	1484
catgggaagg cactttttaga atgattccat acccgttaga gaaaggacat ctattttacc	1544
cttatcccag ctgcacagag acggctgata gagagctatt acctacctt catcatgttt	1604
ctgcttacc acaaaaggag cttcctttgt tcatccattt cacagcagga ttttgctctt	1664
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aagctg	1730



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 <211> 2896  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (324) .. (2318)

<400> 80

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ttgacagagc agcagaattt caactccagt agacttgaat gtgcctcttg gcaaagaagc      180
agagctaacg aggaaaggga tttaaagagt ttttcttggg tgtttgtcaa acttttattc      240
cctgtctgtg tgcagagggg attcaacttc aatttttctg cagtggctct gaggccagcc      300
ccttacttaa agatctggaa agc      atg aag act ggg ctt ttt ttc cta tgt      350
                                Met Lys Thr Gly Leu Phe Phe Leu Cys
                                1                      5

ctc ttg gga act gca gct gca atc ccg aca aat gca aga tta tta tct      398
Leu Leu Gly Thr Ala Ala Ala Ile Pro Thr Asn Ala Arg Leu Leu Ser
 10                      15                      20                      25

gat cat tcc aaa cca act gct gaa acg gta gca cct gac aac act gca      446
Asp His Ser Lys Pro Thr Ala Glu Thr Val Ala Pro Asp Asn Thr Ala
 26                      31                      36                      41

atc ccc agt tta agg gct gaa gct gaa gaa aat gaa aaa gaa aca gca      494
Ile Pro Ser Leu Arg Ala Glu Ala Glu Glu Asn Glu Lys Glu Thr Ala
 42                      47                      52                      57

gta tcc aca gaa gac gat tcc cac cat aag gct gaa aaa tca tca gta      542
Val Ser Thr Glu Asp Asp Ser His His Lys Ala Glu Lys Ser Ser Val
 58                      63                      68                      73

cta aag tca aaa gag gaa agc cat gaa cag tca gca gaa cag ggc aag      590
Leu Lys Ser Lys Glu Glu Ser His Glu Gln Ser Ala Glu Gln Gly Lys
 74                      79                      84                      89

agt tct agc caa gag ctg gga ttg aag gat caa gag gac agt gat ggt      638
Ser Ser Ser Gln Glu Leu Gly Leu Lys Asp Gln Glu Asp Ser Asp Gly
 90                      95                      100                      105

cac tta agt gtg aat ttg gag tat gca cca act gaa ggt aca ttg gac      686
His Leu Ser Val Asn Leu Glu Tyr Ala Pro Thr Glu Gly Thr Leu Asp
106                      111                      116                      121

ata aaa gaa gat atg agt gag cct cag gag aaa aaa ctc tca gag aac      734

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Ile	Lys	Glu	Asp	Met	Ser	Glu	Pro	Gln	Glu	Lys	Lys	Leu	Ser	Glu	Asn		
122					127					132					137		
act	gat	ttt	ttg	gct	cct	ggg	gtt	agt	tcc	ttc	aca	gat	tct	aac	caa	782	
Thr	Asp	Phe	Leu	Ala	Pro	Gly	Val	Ser	Ser	Phe	Thr	Asp	Ser	Asn	Gln		
138					143					148					153		
caa	gaa	agt	atc	aca	aag	aga	gag	gaa	aac	caa	gaa	caa	cct	aga	aat	830	
Gln	Glu	Ser	Ile	Thr	Lys	Arg	Glu	Glu	Asn	Gln	Glu	Gln	Pro	Arg	Asn		
154					159					164					169		
tat	tca	cat	cat	cag	ttg	aac	agg	agc	agt	aaa	cat	agc	caa	ggc	cta	878	
Tyr	Ser	His	His	Gln	Leu	Asn	Arg	Ser	Ser	Lys	His	Ser	Gln	Gly	Leu		
170					175					180					185		
agg	gat	caa	gga	aac	caa	gag	cag	gat	cca	aat	att	tcc	aat	gga	gaa	926	
Arg	Asp	Gln	Gly	Asn	Gln	Glu	Gln	Asp	Pro	Asn	Ile	Ser	Asn	Gly	Glu		
186					191					196					201		
gag	gaa	gaa	gaa	aaa	gag	cca	ggg	gaa	gtt	ggg	acc	cac	aat	gat	aac	974	
Glu	Glu	Glu	Glu	Lys	Glu	Pro	Gly	Glu	Val	Gly	Thr	His	Asn	Asp	Asn		
202					207					212					217		
caa	gaa	aga	aag	aca	gaa	ttg	ccc	agg	gag	cat	gct	aac	agc	aag	cag	1022	
Gln	Glu	Arg	Lys	Thr	Glu	Leu	Pro	Arg	Glu	His	Ala	Asn	Ser	Lys	Gln		
218					223					228					233		
gag	gaa	gac	aat	acc	caa	tct	gat	gat	att	ttg	gaa	gag	tct	gat	caa	1070	
Glu	Glu	Asp	Asn	Thr	Gln	Ser	Asp	Asp	Ile	Leu	Glu	Glu	Ser	Asp	Gln		
234					239					244					249		
cca	act	caa	gta	agc	aag	atg	cag	gag	gat	gaa	ttt	gat	cag	ggg	aac	1118	
Pro	Thr	Gln	Val	Ser	Lys	Met	Gln	Glu	Asp	Glu	Phe	Asp	Gln	Gly	Asn		
250					255					260					265		
caa	gaa	caa	gaa	gat	aac	tcc	aat	gca	gaa	atg	gaa	gag	gaa	aat	gca	1166	
Gln	Glu	Gln	Glu	Asp	Asn	Ser	Asn	Ala	Glu	Met	Glu	Glu	Glu	Asn	Ala		
266					271					276					281		
tcg	aac	gtc	aat	aag	cac	att	caa	gaa	act	gaa	tgg	cag	agt	caa	gag	1214	
Ser	Asn	Val	Asn	Lys	His	Ile	Gln	Glu	Thr	Glu	Trp	Gln	Ser	Gln	Glu		
282					287					292					297		
ggg	aaa	act	ggc	cta	gaa	gct	atc	agc	aac	cac	aaa	gag	aca	gaa	gaa	1262	
Gly	Lys	Thr	Gly	Leu	Glu	Ala	Ile	Ser	Asn	His	Lys	Glu	Thr	Glu	Glu		
298					303					308					313		
aag	act	gtt	tct	gag	gct	ctg	ctc	atg	gaa	cct	act	gat	gat	ggg	aat	1310	
Lys	Thr	Val	Ser	Glu	Ala	Leu	Leu	Met	Glu	Pro	Thr	Asp	Asp	Gly	Asn		
314					319					324					329		
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Thr	Thr	Pro	Arg	Asn	His	Gly	Val	Asp	Asp	Asp	Gly	Asp	Asp	Asp	Gly		
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gat	gat	ggc	ggc	act	gat	ggc	ccc	agg	cac	agt	gca	agt	gat	gac	tac	1406	
Asp	Asp	Gly	Gly	Thr	Asp	Gly	Pro	Arg	His	Ser	Ala	Ser	Asp	Asp	Tyr		

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Phe Ile Pro Ser Gln Ala Phe Leu Glu Ala Glu Arg Ala Gln Ser Ile				
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gcc tat cac ctc aaa att gag gag caa aga gaa aaa gta cat gaa aat	1502			
Ala Tyr His Leu Lys Ile Glu Glu Gln Arg Glu Lys Val His Glu Asn				
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gaa aat ata ggt acc act gag cct gga gag cac caa gag gcc aag aaa	1550			
Glu Asn Ile Gly Thr Thr Glu Pro Gly Glu His Gln Glu Ala Lys Lys				
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gca gag aac tca tca aat gag gag gaa acg tca agt gaa ggc aac atg	1598			
Ala Glu Asn Ser Ser Asn Glu Glu Glu Thr Ser Ser Glu Gly Asn Met				
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Arg Val His Ala Val Asp Ser Cys Met Ser Phe Gln Cys Lys Arg Gly				
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cac atc tgt aag gca gac caa cag gga aaa cct cac tgt gtc tgc cag	1694			
His Ile Cys Lys Ala Asp Gln Gln Gly Lys Pro His Cys Val Cys Gln				
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gat cca gtg act tgt cct cca aca aaa ccc ctt gat caa gtt tgt ggc	1742			
Asp Pro Val Thr Cys Pro Pro Thr Lys Pro Leu Asp Gln Val Cys Gly				
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Thr Asp Asn Gln Thr Tyr Ala Ser Ser Cys His Leu Phe Ala Thr Lys				
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Cys Arg Leu Glu Gly Thr Lys Lys Gly His Gln Leu Gln Leu Asp Tyr				
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Phe Gly Ala Cys Lys Ser Ile Pro Thr Cys Thr Asp Phe Glu Val Ile				
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Ala Ser Leu Val Pro Met Glu His Cys Ile Thr Arg Phe Phe Glu Glu	
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Asp Gly Ser Glu Pro Ser Pro Asp Phe Pro Ala Leu Leu Val Glu Lys	
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Cys Asp Lys Cys Gly Lys Ala Phe Ser Gln Phe Ser Met Leu Ile Ile	
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Cys Lys Glu Cys Gly Lys Ala Phe Ser Gln Asn Ser Asn Leu Ile Ala	
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Lys 572	Pro	Tyr	Glu	Cys	Asp 577	Lys	Cys	Gly	Lys	Ala 582	Phe	Ser	Gln	Cys	Ser 587	
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Leu 588	Leu	Asn	Leu	His	Met 593	Arg	Ser	His	Thr	Gly 598	Glu	Lys	Pro	Tyr	Val 603	
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Gly 636	Lys	Ala	Phe	Ser	Gln 641	Ser	Ser	Ser	Leu	Thr 646	Ile	His	Ile	Arg	Gly 651	
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His 652	Thr	Gly	Glu	Lys	Pro 657	Tyr	Glu	Cys	Lys	Glu 662	Cys	Arg	Lys	Ala	Phe 667	
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Ser 668	His	Lys	Lys	Asn	Phe 673	Ile	Thr	His	Gln	Lys 678	Ile	His	Thr	Arg	Glu 683	
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Lys 684	Pro	Leu	Ser	Val	Ile 689	Ile	Val	Glu	Lys	Ala 694	Ser	Ile	Arg	Leu	Trp 699	
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Thr 700	Ser	Ser	Asp	Ile	*											
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Val Ser Ile Asp Thr Ala Ser Tyr Lys Ile Phe Val Ser Gly Lys Ser
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tgg cca gcc aag ctg cag gcc agc agc cgt gtc gtc atg ttt cgt ttt 754
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Glu Glu Arg His Gln	Arg Glu Lys Asp Phe	Leu Leu Lys Glu Ala Val	
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Tyr Arg Ser Arg Trp	Glu Ser Ser Asn Lys	Ala Leu Leu Glu Met Ala	
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Ala Arg Ala *			



356

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 Glu His Lys Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn Thr Asp  
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 Cys Ser Gly His Leu Gly His Ile Glu Leu Pro Leu Thr Val Tyr Asn  
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Ala Met Glu Arg Arg Val Gln Ala Val Arg Glu Ile His Pro Phe Ile	
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Val Lys Leu Pro Leu Met Lys Ile Asn Phe Asp Met Ser Ser Leu Val	
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Val Ser Leu Ala His Gly Ala Val Ile Tyr Ala Thr Lys Gly Ile Thr	
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Arg Cys Leu Leu Asn Glu Thr Thr Asn Asn Lys Asn Glu Lys Glu Leu	
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Val Leu Asn Thr Glu Gly Ile Asn Leu Pro Glu Leu Phe Lys Tyr Ala	
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Glu Val Leu Asp Leu Arg Arg Leu Tyr Ser Asn Asp Ile His Ala Ile	
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Ser Ala Ser Arg Cys Ser Lys Leu Pro Ser Ser Thr Lys Ser Gly Trp
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Pro Arg Gln Asn Glu Lys Lys Pro Ser Glu Val Phe Arg Thr Asp Leu
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Tyr Tyr Ile Leu Ala Asp Pro Trp Arg Gln Glu Trp Glu Lys Gly Val
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Gln Val Pro Ala Gly Ala Glu Ala Ile Pro Glu Pro Val Val Arg Ile
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Leu Pro Pro Leu Glu Gly Pro Pro Ala Gln Ala Ser Pro Ser Ser Thr

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Asp Leu Asp Glu Ile Asp Ala Tyr Trp Leu Glu Leu Ile Asn Ser Glu				
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Val Leu Glu Glu Leu Glu Thr Leu Cys His Gln Asn Met Ala Arg Ala				
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Ile Glu Thr Gln Glu Gly Leu Gly Ile Glu Tyr Asp Glu Asp Val Val				
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Cys Asp Val Cys Arg Ser Pro Glu Gly Glu Asp Gly Asn Glu Met Val				
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Phe Cys Asp Lys Cys Asn Val Cys Val His Gln Ala Cys Tyr Gly Ile				
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Leu Lys Val Pro Thr Gly Ser Trp Leu Cys Arg Thr Cys Ala Leu Gly				
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Val Gln Pro Lys Cys Leu Leu Cys Pro Lys Arg Gly Gly Ala Leu Lys				
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Pro Thr Arg Ser Gly Thr Lys Trp Val His Val Ser Cys Ala Leu Trp				
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Ile Pro Glu Val Ser Ile Gly Cys Pro Glu Lys Met Glu Pro Ile Thr				
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Lys Ile Ser His Ile Pro Ala Ser Arg Trp Ala Leu Ser Cys Ser Leu				
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Cys Lys Glu Cys Thr Gly Thr Cys Ile Gln Cys Ser Met Pro Ser Cys				
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Val Thr Ala Phe His Val Thr Cys Ala Phe Asp His Gly Leu Glu Met				
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Gln Glu His Ser Asp Gly Gly Pro Arg Asn Glu Pro Thr Ser Glu Pro	
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Thr Glu Pro Ser Gln Ala Gly Glu Asp Leu Glu Lys Val Thr Leu Arg	
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Lys Gln Arg Leu Gln Gln Leu Glu Glu Asp Phe Tyr Glu Leu Val Glu	
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Pro Ala Glu Val Ala Glu Arg Leu Asp Leu Ala Glu Ala Leu Val Asp	
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Glu Gln Asp Val Leu Tyr Arg Arg Leu Lys Leu Phe Thr His Leu Arg	
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Gln Asp Leu Glu Arg Val Arg Asn Leu Cys Tyr Met Val Thr Arg Arg	
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Glu Arg Thr Lys His Ala Ile Cys Lys Leu Gln Glu Gln Ile Phe His	
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Met Thr Lys  
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Glu Glu Trp Gln Phe Leu Ser Pro Ala Gln Lys Asp Leu Tyr Arg Asp  
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Val Met Leu Glu Asn Tyr Ser Asn Leu Val Ser Val Gly Tyr Gln Ala  
36 41 46 51

ggc aaa cct gat gcc ctc acc aag ttg gaa caa gga gaa cca cta tgg 489  
Gly Lys Pro Asp Ala Leu Thr Lys Leu Glu Gln Gly Glu Pro Leu Trp  
52 57 62 67

aca cta gaa gat gaa atc cac agt cca gcc cac cca gaa att gag aaa 537  
Thr Leu Glu Asp Glu Ile His Ser Pro Ala His Pro Glu Ile Glu Lys  
68 73 78 83

gct gat gat cat ctg cag cag ccc ttg caa aac caa aaa ata ctg aag 585  
Ala Asp Asp His Leu Gln Gln Pro Leu Gln Asn Gln Lys Ile Leu Lys  
84 89 94 99

agg acg gga caa cgc tat gaa cac gga aga act ttg aaa tca tat tta 633  
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100 105 110 115

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116 121 126 131

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Phe Asn Gly Asp Gly Ala Phe Leu His Asp Asn His Glu Gln Met Pro  
132 137 142 147

acg gaa att gaa ttc cct gaa agt aga aaa ccc atc agc acc aag tca 777  
Thr Glu Ile Glu Phe Pro Glu Ser Arg Lys Pro Ile Ser Thr Lys Ser  
148 153 158 163

caa ttc ctt aaa cat cag caa aca cac aac ata gag aaa gcc cat gaa 825  
Gln Phe Leu Lys His Gln Gln Thr His Asn Ile Glu Lys Ala His Glu  
164 169 174 179

tgc act gac tgt ggg aaa gct ttc ctc aag aag tct cag ctc act gag 873  
Cys Thr Asp Cys Gly Lys Ala Phe Leu Lys Lys Ser Gln Leu Thr Glu  
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His Lys Arg Ile His Thr Gly Lys Lys Pro His Val Cys Ser Leu Cys	
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Gly Lys Ala Phe Tyr Lys Lys Tyr Arg Leu Thr Glu His Glu Arg Ala	
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His Arg Gly Glu Lys Pro His Gly Cys Ser Leu Cys Gly Lys Ala Phe	
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Tyr Lys Arg Tyr Arg Leu Thr Glu His Glu Arg Ala His Lys Gly Glu	
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Lys Pro Tyr Gly Cys Ser Glu Cys Gly Lys Ala Phe Pro Arg Lys Ser	
260 265 270 275	
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Glu Leu Thr Glu His Gln Arg Ile His Thr Gly Ile Lys Pro His Gln	
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Cys Ser Glu Cys Gly Arg Ala Phe Ser Arg Lys Ser Leu Leu Val Val	
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Gly Lys Gly Phe Ile Gln Lys Gly Asn Leu Asn Ile His Gln Arg Thr	
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His Thr Gly Glu Lys Pro Tyr Gly Cys Ile Asp Cys Gly Lys Ala Phe	
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Ser Gln Lys Ser Cys Leu Val Ala His Gln Arg Tyr His Thr Gly Lys	
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Thr Pro Phe Val Cys Pro Glu Cys Gly Gln Pro Cys Ser Gln Lys Ser	
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Gly Leu Ile Arg His Gln Lys Ile His Ser Gly Glu Lys Pro Tyr Lys	
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Cys Ser Asp Cys Gly Lys Ala Phe Leu Thr Lys Thr Met Leu Ile Val	
404 409 414 419	
cat cac aga act cac acg gga gag aga ccc tat ggc tgt gat gag tgt	1593

His	His	Arg	Thr	His	Thr	Gly	Glu	Arg	Pro	Tyr	Gly	Cys	Asp	Glu	Cys		
420					425					430					435		
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Ala	His	Ile	Leu	His	Ser	*											
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cctcccacaa tattgtttttt catttactat cttgatcata gagtttggct ggggaggggg 2018																	
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tgtggcgaat	gctttgacct	caaagtcaac	cccacaggac	ttccctgaat	cttgtggagc											180	
tggtgcaac	atcactgaac	agagcataga	gacctctcc	ttgccaccg	gcccttccca											240	
cctggttggt	gacaaatcac	aaggtggtag	aagttgccag	ggacagataa	c atg gca											297	



Met Ala  
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gcc agc ggg aag acc agc aag tcc gaa ccg aac cat gtt atc ttc aag Ala Ser Gly Lys Thr Ser Lys Ser Glu Pro Asn His Val Ile Phe Lys 3 8 13 18	345
aag atc tcc cgg gac aaa tcg gtg acc atc tac ctg ggg aac aga gac Lys Ile Ser Arg Asp Lys Ser Val Thr Ile Tyr Leu Gly Asn Arg Asp 19 24 29 34	393
tac ata gac cat gtc agc caa gtc cag cct gtg gat ggt gtc gtg ttg Tyr Ile Asp His Val Ser Gln Val Gln Pro Val Asp Gly Val Val Leu 35 40 45 50	441
gtt gat cct gat ctt gtg aag gga aag aaa gtg tat gtc act ctg acc Val Asp Pro Asp Leu Val Lys Gly Lys Lys Val Tyr Val Thr Leu Thr 51 56 61 66	489
tgc gcc ttc cgc tat ggc caa gag gac att gac gtg atc ggc ttg acc Cys Ala Phe Arg Tyr Gly Gln Glu Asp Ile Asp Val Ile Gly Leu Thr 67 72 77 82	537
ttc cgc agg gac ctg tac ttc tcc cgg gtc cag gtg tat cct cct gtg Phe Arg Arg Asp Leu Tyr Phe Ser Arg Val Gln Val Tyr Pro Pro Val 83 88 93 98	585
ggg gcc gcg agc acc ccc aca aaa ctg caa gag agc ctg ctt aaa aag Gly Ala Ala Ser Thr Pro Thr Lys Leu Gln Glu Ser Leu Leu Lys Lys 99 104 109 114	633
ctg ggg agc aac acg tac ccc ttt ctc ctg acg ttt cct gac tac ttg Leu Gly Ser Asn Thr Tyr Pro Phe Leu Leu Thr Phe Pro Asp Tyr Leu 115 120 125 130	681
ccc tgt tca gtg atg ttg cag cca gct cca caa gat tca ggg aag tcc Pro Cys Ser Val Met Leu Gln Pro Ala Pro Gln Asp Ser Gly Lys Ser 131 136 141 146	729
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gcc gaa gag gac aaa atc ccc aag aag agc tcc gtg cga tta ctg atc Ala Glu Glu Asp Lys Ile Pro Lys Lys Ser Ser Val Arg Leu Leu Ile 163 168 173 178	825
cgc aaa gta cag cat gcc cca ctt gag atg ggt ccc cag ccc cga gct Arg Lys Val Gln His Ala Pro Leu Glu Met Gly Pro Gln Pro Arg Ala 179 184 189 194	873
gag gcg gcc tgg cag ttc ttc atg tct gac aag ccc ctg cac ctt gcg Glu Ala Ala Trp Gln Phe Phe Met Ser Asp Lys Pro Leu His Leu Ala 195 200 205 210	921
gtc tct ctc aac aaa gag atc tat ttc cat ggg gag ccc atc cct gtg Val Ser Leu Asn Lys Glu Ile Tyr Phe His Gly Glu Pro Ile Pro Val	969

211	216	221	226	
acc gtg act gtc acc aat aac aca gag aag acc gtg aag aag att aaa				1017
Thr Val Thr Val Thr Asn Asn Thr Glu Lys Thr Val Lys Lys Ile Lys				
227	232	237	242	
gca ttc gtg gaa cag gtg gcc aat gtg gtt ctc tac tcg agt gat tat				1065
Ala Phe Val Glu Gln Val Ala Asn Val Val Leu Tyr Ser Ser Asp Tyr				
243	248	253	258	
tac gtc aag ccc gtg gct atg gag gaa gcg caa gaa aaa gtg cca cca				1113
Tyr Val Lys Pro Val Ala Met Glu Glu Ala Gln Glu Lys Val Pro Pro				
259	264	269	274	
aac agc act ttg acc aag acg ctg acg ctg ctg ccc ttg ctg gct aac				1161
Asn Ser Thr Leu Thr Lys Thr Leu Thr Leu Leu Pro Leu Leu Ala Asn				
275	280	285	290	
aat cga gaa agg aga ggc att gcc ctg gat ggg aaa atc aag cac gag				1209
Asn Arg Glu Arg Arg Gly Ile Ala Leu Asp Gly Lys Ile Lys His Glu				
291	296	301	306	
gac aca aac ctt gcc tcc agc acc atc att aag gag ggc ata gac cgg				1257
Asp Thr Asn Leu Ala Ser Ser Thr Ile Ile Lys Glu Gly Ile Asp Arg				
307	312	317	322	
acc gtc ctg gga atc ctg gtg tct tac cag atc aag gtg aag ctc aca				1305
Thr Val Leu Gly Ile Leu Val Ser Tyr Gln Ile Lys Val Lys Leu Thr				
323	328	333	338	
gtg tca ggc ttt ctg gga gag ctc acc tcc agt gaa gtc gcc act gag				1353
Val Ser Gly Phe Leu Gly Glu Leu Thr Ser Ser Glu Val Ala Thr Glu				
339	344	349	354	
gtc cca ttc cgc ctc atg cac cct cag cct gag gac cca gct aag gaa				1401
Val Pro Phe Arg Leu Met His Pro Gln Pro Glu Asp Pro Ala Lys Glu				
355	360	365	370	
agt tat cag gat gca aat tta gtt ttt gag gag ttt gct cgc cat aat				1449
Ser Tyr Gln Asp Ala Asn Leu Val Phe Glu Glu Phe Ala Arg His Asn				
371	376	381	386	
ctg aaa gat gca gga gaa gct gag gag ggg aag aga gac aag aat gac				1497
Leu Lys Asp Ala Gly Glu Ala Glu Glu Gly Lys Arg Asp Lys Asn Asp				
387	392	397	402	
att gat gag tga aga tgctgggtca ggatgccgga aaatgacctg tagttaccag				1552
Ile Asp Glu *				
403				
tgcaacgagc aaagccccac agtttagtcc tttggagtta tgctgcgtat gaaaggatga				1612
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cggggccccg ccgagtgcga acctgagccc caaatcccga cccaggcagg gcggggggccc      180
ggagcggggc cttggaggcc cagcccgcgc ggcgacgtct ccgctgtggcg tcacggcacc      240
gactgacggc caccacc   atg gcc gca gac cag cgc ccg aag gcc gac acg      291
                      Met Ala Ala Asp Gln Arg Pro Lys Ala Asp Thr
                      1           5

ctg gcc ctg agg caa cgg ctc atc agc tct tcc tgc aga ctc ttt ttt      339
Leu Ala Leu Arg Gln Arg Leu Ile Ser Ser Ser Cys Arg Leu Phe Phe
12           17           22           27

ccc gag gat cct gtt aag att gtc cgg gcc caa ggg cag tac atg tac      387
Pro Glu Asp Pro Val Lys Ile Val Arg Ala Gln Gly Gln Tyr Met Tyr
28           33           38           43

gat gaa cag ggg gca gaa tac atc gat tgc atc agc aat gtg gcg cac      435
Asp Glu Gln Gly Ala Glu Tyr Ile Asp Cys Ile Ser Asn Val Ala His
44           49           54           59

gtt ggg cac tgc cac cct ctc gtg gtc caa gca gca cat gag cag aac      483
Val Gly His Cys His Pro Leu Val Val Gln Ala Ala His Glu Gln Asn
60           65           70           75

cag gtg ctc aac acc aac agc cgg tac ctg cat gac aac atc gtg gac      531
Gln Val Leu Asn Thr Asn Ser Arg Tyr Leu His Asp Asn Ile Val Asp
76           81           86           91

tat gcg cag agg ctg tca gag acc ctg ccg gag cag ctc tgt gtg ttc      579
Tyr Ala Gln Arg Leu Ser Glu Thr Leu Pro Glu Gln Leu Cys Val Phe
92           97           102          107

tat ttc ctg aat tct ggg tca gaa gcc aat gac ctg gcc ctg agg ctg      627
Tyr Phe Leu Asn Ser Gly Ser Glu Ala Asn Asp Leu Ala Leu Arg Leu
108          113          118          123

gct cgc cac tac acg gga cac cag gac gtg gtg gta tta gat cat gcg      675
Ala Arg His Tyr Thr Gly His Gln Asp Val Val Val Leu Asp His Ala
124          129          134          139

tat cac ggc cac ctg agc tcc ctg att gac atc agt ccc tac aag ttc      723
Tyr His Gly His Leu Ser Ser Leu Ile Asp Ile Ser Pro Tyr Lys Phe
140          145          150          155

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cgc aac ctg gat ggc cag aag gag tgg gtc cac gtg gca cct ctc cca	771
Arg Asn Leu Asp Gly Gln Lys Glu Trp Val His Val Ala Pro Leu Pro	
156 161 166 171	
gac acc tac cgg ggc ccc tac cgg gag gac cac ccc aac cca gct atg	819
Asp Thr Tyr Arg Gly Pro Tyr Arg Glu Asp His Pro Asn Pro Ala Met	
172 177 182 187	
gcc tat gcc aac gag gtg aaa cgt gtg gtc agc agt gca cag gag aag	867
Ala Tyr Ala Asn Glu Val Lys Arg Val Val Ser Ser Ala Gln Glu Lys	
188 193 198 203	
ggc agg aag att gca gcc ttc ttc gct gag tct ctg ccc agt gtg gga	915
Gly Arg Lys Ile Ala Ala Phe Phe Ala Glu Ser Leu Pro Ser Val Gly	
204 209 214 219	
ggg cag atc att ccc cct gct ggc tac ttc tcc caa gtg gca gag cac	963
Gly Gln Ile Ile Pro Pro Ala Gly Tyr Phe Ser Gln Val Ala Glu His	
220 225 230 235	
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Ile Arg Lys Ala Gly Gly Val Phe Val Ala Asn Glu Ile Gln Val Gly	
236 241 246 251	
ttt ggc cgg gta ggc aag cac ttc tgg gcc ttc cag ctc cag gga aaa	1059
Phe Gly Arg Val Gly Lys His Phe Trp Ala Phe Gln Leu Gln Gly Lys	
252 257 262 267	
gac ttc gtc cct gac atc gtc acc atg ggc aag tcc att ggc aac ggc	1107
Asp Phe Val Pro Asp Ile Val Thr Met Gly Lys Ser Ile Gly Asn Gly	
268 273 278 283	
cac cct gtt gcc tgc gtg gcc gca acc cag cct gtg gcg agg gca ttt	1155
His Pro Val Ala Cys Val Ala Ala Thr Gln Pro Val Ala Arg Ala Phe	
284 289 294 299	
gaa gcc acc ggc gtt gag tac ttc aac acg ttt ggg ggc agc cca gtg	1203
Glu Ala Thr Gly Val Glu Tyr Phe Asn Thr Phe Gly Gly Ser Pro Val	
300 305 310 315	
tcc tgc gct gtg ggg ctg gcc gtc ctg aat gtc ttg gag aag gag cag	1251
Ser Cys Ala Val Gly Leu Ala Val Leu Asn Val Leu Glu Lys Glu Gln	
316 321 326 331	
ctc cag gat cat gcc acc agt gta ggc agc ttc ctg atg cag ctc ctc	1299
Leu Gln Asp His Ala Thr Ser Val Gly Ser Phe Leu Met Gln Leu Leu	
332 337 342 347	
ggg cag caa aaa atc aaa cat ccc atc gtc ggg gat gtc agg ggt gtt	1347
Gly Gln Gln Lys Ile Lys His Pro Ile Val Gly Asp Val Arg Gly Val	
348 353 358 363	
ggg ctc ttc att ggt gtg gat ctg atc aaa gat gag gcc aca agg aca	1395
Gly Leu Phe Ile Gly Val Asp Leu Ile Lys Asp Glu Ala Thr Arg Thr	
364 369 374 379	

cca gca act gaa gag gct gcc tac ttg gta tca agg ctg aag gag aac	1443
Pro Ala Thr Glu Glu Ala Ala Tyr Leu Val Ser Arg Leu Lys Glu Asn	
380 385 390 395	

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Tyr Val Leu Leu Ser Thr Asp Gly Pro Gly Arg Asn Ile Leu Lys Phe	
396 401 406 411	

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Lys Pro Pro Met Cys Phe Ser Leu Asp Asn Ala Arg Gln Val Val Ala	
412 417 422 427	

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428 433 438 443	

gaa acg ctg agg ctc cag ccc taa gccagccctg ctctgcctaa gtgtactcca	1641
Glu Thr Leu Arg Leu Gln Pro *	
444 449	

gaagaaactc atctcatcca aatacacgct attgagaagg cgagcctgac ctccctctta	1701
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cccaccccct cctcctaacc actgggtctgt tggaataacc cagatgtctg catcccccctca	1821
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agtcagtcaa tttcctttct gtccactggg ggtggaatgg ggtaggggtgg gataacttta	1881
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agtgctcctg cttaaataaa ttagaccaga ccagtgtatt totaaagaaa atcctgacat	1941
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gcc gac agg gcc atc cag cgc ttc ctg cgg acc ggg gcg gcc gtc aga	156
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237	242	247	252	
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Leu Ser Ile Pro Ala Ala Thr Trp Gly His	Pro Leu Thr Leu Asp His			
253	258	263	268	
tgc ctt cac cac ttc atc tca tca gaa tca	gtg cgg gat gtt gtg tgt			924
Cys Leu His His Phe Ile Ser Ser Glu Ser	Val Arg Asp Val Val Cys			
269	274	279	284	
gac aac tgt aca aag att gaa gcc aag gga	acg ttg aac ggg gaa aag			972
Asp Asn Cys Thr Lys Ile Glu Ala Lys Gly	Thr Leu Asn Gly Glu Lys			
285	290	295	300	
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Val Glu His Gln Arg Thr Thr Phe Val Lys	Gln Leu Lys Leu Gly Lys			
301	306	311	316	
ctc cct cag tgt ctc tgc atc cac cta cag	cgg ctg agc tgg tcc agc			1068
Leu Pro Gln Cys Leu Cys Ile His Leu Gln	Arg Leu Ser Trp Ser Ser			
317	322	327	332	
cac ggc acg cct ctg aag cgg cat gag cac	gtg cag ttc aat gag ttc			1116
His Gly Thr Pro Leu Lys Arg His Glu His	Val Gln Phe Asn Glu Phe			
333	338	343	348	
ctg atg atg gac att tac aag tac cac ctc	ctt gga cat aaa cct agt			1164
Leu Met Met Asp Ile Tyr Lys Tyr His Leu	Leu Gly His Lys Pro Ser			
349	354	359	364	
caa cac aac cct aaa ctg aac aag aac cca	ggg cct aca ctg gag ctg			1212
Gln His Asn Pro Lys Leu Asn Lys Asn Pro	Gly Pro Thr Leu Glu Leu			
365	370	375	380	
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Gln Asp Gly Pro Gly Ala Pro His Gln Phe	*			
381	386	391		
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cgatgccett cctctccca gttgttcccg actacagctc	ctccacatac ctcttccggc			1383
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ctccaaaccg cacaccaga cgcacacgca taccacagcg cccggcagtt atg tat	296
Met Tyr	
1	
tct ccg ctc tgt ctc acc cag gat gaa ttt cat cct ttc atc gaa gca	344
Ser Pro Leu Cys Leu Thr Gln Asp Glu Phe His Pro Phe Ile Glu Ala	
3 8 13 18	
ctt ctg ccc cac gtc cga gcc ttt gcc tac aca tgg ttc aac ctg cag	392
Leu Leu Pro His Val Arg Ala Phe Ala Tyr Thr Trp Phe Asn Leu Gln	
19 24 29 34	
gcc cga aaa cga aaa tac ttc aaa aaa cat gaa aag cgt atg tca aaa	440
Ala Arg Lys Arg Lys Tyr Phe Lys Lys His Glu Lys Arg Met Ser Lys	
35 40 45 50	
gaa gaa gag aga gcc gtg aag gat gaa ttg cta agt gaa aaa cca gag	488
Glu Glu Glu Arg Ala Val Lys Asp Glu Leu Leu Ser Glu Lys Pro Glu	
51 56 61 66	
gtc aag cag aag tgg gca tct cga ctt ctg gca aag ttg cgg aaa gat	536
Val Lys Gln Lys Trp Ala Ser Arg Leu Leu Ala Lys Leu Arg Lys Asp	
67 72 77 82	
atc cga ccc gaa tat cga gag gat ttt gtt ctt aca gtt aca ggg aaa	584
Ile Arg Pro Glu Tyr Arg Glu Asp Phe Val Leu Thr Val Thr Gly Lys	
83 88 93 98	
aaa cct cca tgt tgt gtt ctt tcc aac cca gac cag aaa ggc aag atg	632
Lys Pro Pro Cys Cys Val Leu Ser Asn Pro Asp Gln Lys Gly Lys Met	
99 104 109 114	
cga aga att gac tgc ctc cgc cag gca gat aaa gtc tgg agg ttg gac	680
Arg Arg Ile Asp Cys Leu Arg Gln Ala Asp Lys Val Trp Arg Leu Asp	
115 120 125 130	
ctt gtt atg gtg att ttg ttt aaa ggt att ccg ctg gaa agt act gat	728
Leu Val Met Val Ile Leu Phe Lys Gly Ile Pro Leu Glu Ser Thr Asp	
131 136 141 146	
ggc gag cgc ctt gta aag tcc cca caa tgc tct aat cca ggg ctc tgt	776
Gly Glu Arg Leu Val Lys Ser Pro Gln Cys Ser Asn Pro Gly Leu Cys	
147 152 157 162	



gtc caa ccc cat cac ata ggg gtt tct gtt aag gaa ctc gat tta tat	824
Val Gln Pro His His Ile Gly Val Ser Val Lys Glu Leu Asp Leu Tyr	
163 168 173 178	
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Leu Ala Tyr Phe Val His Ala Ala Asp Ser Ser Gln Ser Glu Ser Pro	
179 184 189 194	
agc cag cca agt gac gct gac att aag gac cag cca gaa aat gga cat	920
Ser Gln Pro Ser Asp Ala Asp Ile Lys Asp Gln Pro Glu Asn Gly His	
195 200 205 210	
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Leu Gly Phe Gln Asp Ser Phe Val Thr Ser Gly Val Phe Ser Val Thr	
211 216 221 226	
gag cta gta aga gtg tca cag aca cca ata gct gca gga act ggc cca	1016
Glu Leu Val Arg Val Ser Gln Thr Pro Ile Ala Ala Gly Thr Gly Pro	
227 232 237 242	
aat ttt tct ctc tca gat ttg gaa agt tct tca tac tac agc atg agt	1064
Asn Phe Ser Leu Ser Asp Leu Glu Ser Ser Ser Tyr Tyr Ser Met Ser	
243 248 253 258	
cca gga gca atg agg agg tct tta ccc agc aca tcc tct acg agc tcc	1112
Pro Gly Ala Met Arg Arg Ser Leu Pro Ser Thr Ser Ser Thr Ser Ser	
259 264 269 274	
aca aag cgc ctc aag tct gtg gag gat gaa atg gac agt cct ggt gag	1160
Thr Lys Arg Leu Lys Ser Val Glu Asp Glu Met Asp Ser Pro Gly Glu	
275 280 285 290	
gag cca ttt tat aca ggc caa ggg cgc tcc cca gga agt ggc agt cag	1208
Glu Pro Phe Tyr Thr Gly Gln Gly Arg Ser Pro Gly Ser Gly Ser Gln	
291 296 301 306	
tca agt gga tgg cat gaa gtg gag cca gga atg cca tct cca acc aca	1256
Ser Ser Gly Trp His Glu Val Glu Pro Gly Met Pro Ser Pro Thr Thr	
307 312 317 322	
ctg aag aag tcg gag aag tct ggt ttc agc agc ccc tcc cct tca cag	1304
Leu Lys Lys Ser Glu Lys Ser Gly Phe Ser Ser Pro Ser Pro Ser Gln	
323 328 333 338	
acc tcc tcc ctg gga acg gcg ttc aca cag cat cac cga cct gtc att	1352
Thr Ser Ser Leu Gly Thr Ala Phe Thr Gln His His Arg Pro Val Ile	
339 344 349 354	
aca gga ccc aga gca agt cca cat gca aca cca tcg act ctt cat ttc	1400
Thr Gly Pro Arg Ala Ser Pro His Ala Thr Pro Ser Thr Leu His Phe	
355 360 365 370	
ccg aca tca ccc att atc cag cag cct ggg cct tac ttc tca cac cca	1448
Pro Thr Ser Pro Ile Ile Gln Gln Pro Gly Pro Tyr Phe Ser His Pro	
371 376 381 386	

gcc atc cgc tat cac cct cag gag acg ctg aaa gaa ttt gtc caa ctt	1496
Ala Ile Arg Tyr His Pro Gln Glu Thr Leu Lys Glu Phe Val Gln Leu	
387 392 397 402	
gtc tgc cct gat gct ggt cag cag gct gga cag ccc aat ggg agc agc	1544
Val Cys Pro Asp Ala Gly Gln Gln Ala Gly Gln Pro Asn Gly Ser Ser	
403 408 413 418	
caa ggc aag gtg cac aac cca ttc ctt ccc acc cca atg ttg cca ccg	1592
Gln Gly Lys Val His Asn Pro Phe Leu Pro Thr Pro Met Leu Pro Pro	
419 424 429 434	
cca ccg cca cca ccg atg gcc agg cct gtg cct ctg ccg gtg cca gac	1640
Pro Pro Pro Pro Pro Met Ala Arg Pro Val Pro Leu Pro Val Pro Asp	
435 440 445 450	
aca aag cct cca acc acg tca aca gaa gga ggt gca gcc tcc ccc acg	1688
Thr Lys Pro Pro Thr Thr Ser Thr Glu Gly Gly Ala Ala Ser Pro Thr	
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Ser Pro Thr Tyr Ser Thr Pro Ser Thr Ser Pro Ala Asn Arg Phe Val	
467 472 477 482	
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Ser Val Gly Pro Arg Asp Pro Ser Phe Val Asn Ile Pro Gln Gln Thr	
483 488 493 498	
cag tcc tgg tac ctg gga taa aa gttgcagcgt cccaccatcc accagacaga	1837
Gln Ser Trp Tyr Leu Gly *	
499 504	
ccacctgata ccttctcaac tctgtaacat ggacgcaacc tcaaccacagc gcagttacaa	1897
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 <222> (265)..(2067)

<400> 94



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Lys Asp Pro Asp Gln Ala Ala Ser Tyr Thr Val Glu Pro Asp Pro Arg	
202 207 212 217	
tcc agg cac ctg gcc ctc agc ggg ccc acc ttt ggt atc att gtg aag	963
Ser Arg His Leu Ala Leu Ser Gly Pro Thr Phe Gly Ile Ile Val Lys	
218 223 228 233	
cac ttc ccc aag ctg ctg ccc aag gtc ctg gtc cag ggc act gtc ttt	1011
His Phe Pro Lys Leu Leu Pro Lys Val Leu Val Gln Gly Thr Val Phe	
234 239 244 249	
gcc cgc atg gcc cct gag cag aag aca gag ctg gtg tgc gag cta cag	1059
Ala Arg Met Ala Pro Glu Gln Lys Thr Glu Leu Val Cys Glu Leu Gln	
250 255 260 265	
aag ctt cag tac tgc gtg ggc atg tgc gga gac ggt gcc aat gac tgt	1107
Lys Leu Gln Tyr Cys Val Gly Met Cys Gly Asp Gly Ala Asn Asp Cys	
266 271 276 281	
ggg gcc ctg aag gcg gct gat gtc ggc atc tcg ctg tcc cag gca gaa	1155
Gly Ala Leu Lys Ala Ala Asp Val Gly Ile Ser Leu Ser Gln Ala Glu	
282 287 292 297	
gcc tca gtg gtc tca ccc ttc acc tcg agc atg gcc agt att gag tgc	1203
Ala Ser Val Val Ser Pro Phe Thr Ser Ser Met Ala Ser Ile Glu Cys	
298 303 308 313	
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Val Pro Met Val Ile Arg Glu Gly Arg Cys Ser Leu Asp Thr Ser Phe	
314 319 324 329	
agc gtc ttc aag tac atg gct ctg tac agc ctg acc cag ttc atc tcc	1299
Ser Val Phe Lys Tyr Met Ala Leu Tyr Ser Leu Thr Gln Phe Ile Ser	
330 335 340 345	
gtc ctg atc ctc tac acg atc aac acc aac ctg ggt gac ctg cag ttc	1347
Val Leu Ile Leu Tyr Thr Ile Asn Thr Asn Leu Gly Asp Leu Gln Phe	
346 351 356 361	
ctg gcc atc gac ctg gtc atc acc acc aca gtg gca gtg ctc atg agc	1395
Leu Ala Ile Asp Leu Val Ile Thr Thr Thr Val Ala Val Leu Met Ser	
362 367 372 377	
cgc acg ggg cca gcg ctg gtc ctg gga cgg gtg cgg cca ccg ggg gcg	1443
Arg Thr Gly Pro Ala Leu Val Leu Gly Arg Val Arg Pro Pro Gly Ala	
378 383 388 393	
ctg ctc agc gtg ccc gtg ctc agc agc ctg ctg ctg cag atg gtc ctg	1491
Leu Leu Ser Val Pro Val Leu Ser Ser Leu Leu Leu Gln Met Val Leu	
394 399 404 409	
gtg acc ggc gtg cag cta ggg ggc tac ttc ctg acc ctg gcc cag cca	1539
Val Thr Gly Val Gln Leu Gly Gly Tyr Phe Leu Thr Leu Ala Gln Pro	

410	415	420	425	
tgg ttc gtg cct ctg	aac agg aca gtg gcc	gca cca gac aac ctg	ccc	1587
Trp Phe Val Pro Leu	Asn Arg Thr Val Ala	Ala Pro Asp Asn Leu	Pro	
426	431	436	441	
aac tac gag aac acc	gtg gtc ttc tct ctg	tcc agc ttc cag tac	ctc	1635
Asn Tyr Glu Asn Thr	Val Val Phe Ser Leu	Ser Ser Phe Gln Tyr	Leu	
442	447	452	457	
atc ctg gct gca gcc	gtg tcc aag ggg gcg	ccc ttc cgc cgg ccg	ctc	1683
Ile Leu Ala Ala Ala	Val Ser Lys Gly Ala	Pro Phe Arg Arg Pro	Leu	
458	463	468	473	
tac acc aat gag cgt	gct aga cca gtg cct	ccc cgc ctg cct gcg	ccg	1731
Tyr Thr Asn Glu Arg	Ala Arg Pro Val Pro	Pro Arg Leu Pro Ala	Pro	
474	479	484	489	
cct ccg gcc caa gcg	ggc ctc caa gaa gcg	ctt caa gca gct gga	acg	1779
Pro Pro Ala Gln Ala	Gly Leu Gln Glu Ala	Leu Gln Ala Ala Gly	Thr	
490	495	500	505	
aga gct ggc cga gca	gcc ctg gcc gcc gct	gcc cgc cgg ccc cct	gag	1827
Arg Ala Gly Arg Ala	Ala Leu Ala Ala Ala	Ala Arg Arg Pro Pro	Glu	
506	511	516	521	
gta gtg cag gcc cac	ggg cac ccc aga cac	tgg aac tcc ctg cct	ctg	1875
Val Val Gln Ala His	Gly His Pro Arg His	Trp Asn Ser Leu Pro	Leu	
522	527	532	537	
agc cac caa ctg gac	ccc tct cca gca aca	cca ccg cca cca cct	ccc	1923
Ser His Gln Leu Asp	Pro Ser Pro Ala Thr	Pro Pro Pro Pro Pro	Pro	
538	543	548	553	
aca tcc ctg agg ttg	gcg act gtc tac act	cct ccc ccg aga cca	ccc	1971
Thr Ser Leu Arg Leu	Ala Thr Val Tyr Thr	Pro Pro Pro Arg Pro	Pro	
554	559	564	569	
cca ccc tgg gga agc	gtt gac tac tgt ccc	cta cct tgg acc atc	ccg	2019
Pro Pro Trp Gly Ser	Val Asp Tyr Cys Pro	Leu Pro Trp Thr Ile	Pro	
570	575	580	585	
cgt agg ggt ggc agc	ccc cag ctc ccc tca	gtg ctg ctg tca gtg	tag	2067
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ccctgcatct ggagccaccc acctggagga actcatcggg ctctctctgt agacgggaaa      180
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gcaggtgaga agacaccccc acaaaacccc aaaactagcc ttaggctgtt tttccccaac      420
acaacgcacc tccacacccc acaccgccag cagcccacct gggtagccaa agtgagctgc      480
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gatgaaagtt atctgaaaga gcccgtagcc cctataaaca cggcagagga atgtcttaag      780
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                                1      5
                                Met Leu Thr Gly Tyr Leu Tyr Leu

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Met Trp Arg Arg Lys Ala Phe Trp Ser Gly Thr Gln Arg His Pro Leu
  9              14              19              24

ccc ggt ggt ctg aag agg agg agg aga cca ggg agg ggt cct tgg cca      927
Pro Gly Gly Leu Lys Arg Arg Arg Pro Gly Arg Gly Pro Trp Pro
  25              30              35              40

gcc cct ggc ggc caa ggg gtg ggt cct tct gct cta tag aaggcaggaa      976
Ala Pro Gly Gly Gln Gly Val Gly Pro Ser Ala Leu *
  41              46              51

gcccgccagc taaccgcccg ggtcaggggg agcaggcctg atctctccca agcctgtgac      1036
cgaggctctg cctgatgtcc aaggggcccc tgtgccagta ccccccattc ccacgcccc      1096
cagccttctt cacctccaga atcagccgcc caggtgcagc actatctcct ttctttttct      1156

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aaa ggc ctt ggc ctc ctc cag ctg ggt ctg ctc ctt cct ttg aac ccc 96  
 Lys Gly Leu Gly Leu Leu Gln Leu Gly Leu Leu Leu Pro Leu Asn Pro  
 17 22 27 32

atc ggt acc tat gcc cac acc ttt cag agc ttt cct gat cag tgt caa 144  
 Ile Gly Thr Tyr Ala His Thr Phe Gln Ser Phe Pro Asp Gln Cys Gln  
 33 38 43 48

cat gct gct ctt cct ctt aca aaa tgt acc atc aat aca gcc cag gca 192  
 His Ala Ala Leu Pro Leu Thr Lys Cys Thr Ile Asn Thr Ala Gln Ala  
 49 54 59 64

cat ggc tcc cac aaa gct agc cac tta tat agt atg ggt cac atc aaa 240  
 His Gly Ser His Lys Ala Ser His Leu Tyr Ser Met Gly His Ile Lys  
 65 70 75 80

aat gac tcc agc aca atc att cat aca gac ttc tct cac act aaa cct 288  
 Asn Asp Ser Ser Thr Ile Ile His Thr Asp Phe Ser His Thr Lys Pro  
 81 86 91 96

tta aac aag caa ggt tca gta gct aca gaa ctc tcc atc atc atc atc 336  
 Leu Asn Lys Gln Gly Ser Val Ala Thr Glu Leu Ser Ile Ile Ile Ile  
 97 102 107 112

atc atc atc tgg ttg ctt ttg gca agg ttc agt agc tac aga act ctc 384  
 Ile Ile Ile Trp Leu Leu Leu Ala Arg Phe Ser Ser Tyr Arg Thr Leu

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129	134 139 144		
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Ala Thr Glu Leu Ser Ser Ser Ser Ser Ser	Ser Ser Ser Ser Ser Ser		
145	150 155 160		
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Ser Gly Cys Phe Gln Gln Gly Ser Val Ala	Thr Glu Leu Ser Ile Ile		
161	166 171 176		
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177	182 187 192		
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Arg Phe Ser Ser Tyr Arg Thr Leu Leu Leu	Leu Leu Leu Leu Leu Leu		
193	198 203 208		
ctc ctc atc atc atc atc atc atc tgg ttg	ctt tta gca agg ttc agt	672	
Leu Leu Ile Ile Ile Ile Ile Ile Ile Trp	Leu Leu Ala Arg Phe Ser		
209	214 219 224		
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Ser Tyr Arg Thr Leu Leu Leu Leu Leu Leu	Leu Ile Ile Ile Ile Ile		
225	230 235 240		
atc tgg ttg ctt tca gca agg ttc agt agc	tac aga act ctc ctt cat	768	
Ile Trp Leu Leu Ser Ala Arg Phe Ser Ser	Tyr Arg Thr Leu Leu His		
241	246 251 256		
cat cat caa cat cat cat ctg gtt gct ttt	ggc aag caa ggt tca gta	816	
His His Gln His His His Leu Val Ala Phe	Gly Lys Gln Gly Ser Val		
257	262 267 272		
gct aca gaa ctc tcc tcc tcc tcc tcc tcc	tca tca tca tca tca	864	
Ala Thr Glu Leu Ser Ser Ser Ser Ser Ser	Ser Ser Ser Ser Ser Ser		
273	278 283 288		
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Ser Gly Cys Phe Gln Gln Gly Ser Val Ala	Thr Glu Leu Ser Ile Ile		
289	294 299 304		
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305	310 315 320		
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Arg Phe Ser Ser Tyr Arg Thr Leu Leu His	His His His His His His		
321	326 331 336		
ctg gtt gct ttt ggc aag caa ggt tca gta	gct aca gaa ctc tcc atc	1056	
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337	342 347 352		



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cga aac acc tat tcc ata ggt aac caa ttc cag tca aaa atg cca gag	1248
Arg Asn Thr Tyr Ser Ile Gly Asn Gln Phe Gln Ser Lys Met Pro Glu	
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tat tac tcc tca acc caa tgc cct atc tcc tta gtg gat tat aaa ctt	1296
Tyr Tyr Ser Ser Thr Gln Cys Pro Ile Ser Leu Val Asp Tyr Lys Leu	
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Thr Thr Thr Thr Cys Leu Leu Trp Ile Gln Ser Pro Pro Lys Ser Glu	
433 438 443 448	
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Ser Ser Leu Pro Gly Tyr Lys Pro Pro Ser Pro Gly Ser Ser Met Leu	
449 454 459 464	
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Asp Ser Ser Leu Thr Ser Thr Ser Ser Asp His Trp Val Ala Leu Leu	
465 470 475 480	
gcc gtc ctc cag cct tct tcc cgc tca gac act cat cca ctg tcc ggg	1488
Ala Val Leu Gln Pro Ser Ser Arg Ser Asp Thr His Pro Leu Ser Gly	
481 486 491 496	
gag cct cga ccc ctc cta tac ccc ctc ccc gat ccc gca gtc ccc ttc	1536
Glu Pro Arg Pro Leu Leu Tyr Pro Leu Pro Asp Pro Ala Val Pro Phe	
497 502 507 512	
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Trp Thr Leu Arg Thr Pro Leu Ser Pro Arg Thr Pro Tyr Arg Leu Phe	
513 518 523 528	
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Leu Leu His Ser His Asn Ser Ala Arg Ala Pro Leu Arg Leu Cys Gly	
529 534 539 544	
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Gln Arg Gly Arg Ala Gln Ala Ile Gly Ala Glu Glu Leu Pro Val Pro	
545 550 555 560	
gct gtc aat aag acg tgg acc tgc gag ccg ggg caa aag ggc ttc cgg	1728
Ala Val Asn Lys Thr Trp Thr Cys Glu Pro Gly Gln Lys Gly Phe Arg	
561 566 571 576	

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Ser Ala Gly Asn Trp Arg Leu Ala Val Gly Val Asp Arg Arg Gly Asp	
577 582 587 592	
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Trp Arg Leu Ser Asp Leu Leu Leu Phe Ala Asp Gln Ala Ala Val Gly	
593 598 603 608	
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Asn Asp Gly Cys Pro Asp Pro Val Gly Gly Val Lys Glu Ser Cys Thr	
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Asp Thr Arg Thr Leu Thr Glu Gly Arg Val Arg Leu Arg Ala Pro His	
625 630 635 640	
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Leu Val Ala Glu Arg Ser Ala Phe Arg Gly Arg Pro Pro Gly Thr Ser	
641 646 651 656	
cgc aga gga ccg ggc ttt ata ctc ttt gct cct ttt cct ccc cta aaa	2016
Arg Arg Gly Pro Gly Phe Ile Leu Phe Ala Pro Phe Pro Pro Leu Lys	
657 662 667 672	
gct gtg ctt gac ttc ttg gtg tac atg gat aaa ggc tac aat gaa gga	2064
Ala Val Leu Asp Phe Leu Val Tyr Met Asp Lys Gly Tyr Asn Glu Gly	
673 678 683 688	
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Phe Ile Gly Gln Gln Asn Leu Lys Gly Arg Glu Arg Glu Asn Lys Arg	
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Tyr Ser Ala Tyr Leu Gln Ser Tyr Leu Ser Tyr Gln Ala Gln Met Glu	
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Pro Tyr Gly Ala Arg Met Pro Phe Gly Gly Gln Val Pro Leu Gly Ala	
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 Cys Pro Leu Val Ser Arg Ser Arg Asn Ser Pro Val Glu Asp Asp Asp  
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gat gat gat gat gtt gtg ttt att gaa tct ata caa cct cct tca att 366  
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Ser Ala Pro Ala Ile Ala Asp Gln Arg Asn Phe Ile Phe Ala Ser Ser	
72 77 82 87	
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Arg Asp Leu Ala Ser Gln Lys Gly Asn Ile Ser Glu Thr Ile Val Ile	
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Ser Cys Phe Ile Glu Trp Gly Leu Pro Gly Thr Lys Asn Lys Thr Asn	
136 141 146 151	
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tct tta tca cca gtg gcc tta ctt cgt aag cag aat ttc cag cct aca	846
Ser Leu Ser Pro Val Ala Leu Leu Arg Lys Gln Asn Phe Gln Pro Thr	
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Val Leu Gly His Gln Pro Pro Phe Phe Pro Ala Leu Thr Leu Pro Pro  
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aac ggc gcg gcg gcg ctc tcg ctg ccg ggc gcc ctg gcc aag ccg atc 192  
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Met Asp Gln Leu Val Gly Ala Ala Glu Thr Gly Ile Pro Phe Ser Ser  
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Glu Glu Val Glu Asp Asp Pro Lys Val His Leu Glu Ala Lys Glu Leu  
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113 118 123 128

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129 134 139 144

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tcc atg gcg gcg gcc gcg ggg ccc ctg gac ggc aaa gtc gcc gcc ctg				1968
Ser Met Ala Ala Ala Ala Gly Pro Leu Asp Gly Lys Val Ala Ala Leu				
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Ser Arg Ser Ser Thr Leu Ser Ser Ser Ser Met Ser Leu Ser Pro Lys				
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721				
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gccccgccc agagactcag cgcggatcgc tgctccctct cgcc atg gcg cag gtg      476
                                   Met Ala Gln Val
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Arg Arg Gln Thr Ser Gly Pro Leu Tyr Leu Ala Val Trp Asp Lys Ala
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gag gac tca ggg gga aga atg act aca gcc tgc agt cct cat aat cct      620
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cag tgc aca gct gac ttg ggt gct cag tac atc acc tgc act cct cat      668
Gln Cys Thr Ala Asp Leu Gly Ala Gln Tyr Ile Thr Cys Thr Pro His
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tat gcc aaa aaa cac caa cgt ttt tat gat gaa ctg tta gcc tat ggc      716
Tyr Ala Lys Lys His Gln Arg Phe Tyr Asp Glu Leu Leu Ala Tyr Gly
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gtt ttg agg cct cta agc tcg cct att gaa gga atg gtg atg aaa gaa      764
Val Leu Arg Pro Leu Ser Ser Pro Ile Glu Gly Met Val Met Lys Glu
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gga gac tgt aac ttt gtg gca cct caa gga att tct tca att att aag      812

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Thr	Gln	Ile	Asn	Leu	Arg	Asp	Asp	Lys	Trp	Glu	Val	Ser	Lys	Gln	Thr	
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Gly	Ser	Pro	Glu	Gln	Phe	Asp	Leu	Ile	Val	Leu	Thr	Met	Pro	Val	Pro	
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Gln	Arg	Gln	Gln	Leu	Glu	Ala	Val	Ser	Tyr	Ser	Ser	Arg	Tyr	Ala	Leu	
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Gly	Leu	Phe	Tyr	Glu	Ala	Gly	Thr	Lys	Ile	Asp	Val	Pro	Trp	Ala	Gly	
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Gln	Tyr	Ile	Thr	Ser	Asn	Pro	Cys	Ile	Arg	Phe	Val	Ser	Ile	Asp	Asn	
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Lys	Lys	Arg	Asn	Ile	Glu	Ser	Ser	Glu	Ile	Gly	Pro	Ser	Leu	Val	Ile	
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Val	Thr	Asn	Ala	Ala	Ala	Asn	Cys	Pro	Gly	Gln	Met	Thr	Leu	His	His	
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309					314				319						324	
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Tyr Ile *				
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	Met Leu Ser Val Ala Ala			
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cgc tcg ggc cgg ttc gcg ccc gtc ctg tcg gcc acc cgg gag cag cct				160
Arg Ser Gly Pro Phe Ala Pro Val Leu Ser Ala Thr Pro Glu Gln Pro				
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Val Leu Asp Leu Lys Arg Pro Phe Leu Ser Arg Glu Ser Leu Ser Gly				
23 28 33 38				
cag gcc gtg cgc cgg cct ttg gtc gcc tcc gtg ggc ctc aat gtc cct				256
Gln Ala Val Arg Arg Pro Leu Val Ala Ser Val Gly Leu Asn Val Pro				
39 44 49 54				
gct tct gtt tgt tat tcc cac aca gac atc aag gtg cct gac ttc tct				304
Ala Ser Val Cys Tyr Ser His Thr Asp Ile Lys Val Pro Asp Phe Ser				
55 60 65 70				

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87 92 97 102	
act gtg ggt gtc gca tat gct gcc aag aat gcc gtc acc cag ttc gtt	448
Thr Val Gly Val Ala Tyr Ala Ala Lys Asn Ala Val Thr Gln Phe Val	
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tcc agc atg agt gct tct gct gat gtg ttg gcc ctg gcg aaa atc gaa	496
Ser Ser Met Ser Ala Ser Ala Asp Val Leu Ala Leu Ala Lys Ile Glu	
119 124 129 134	
atc aag tta tcc gat att cca gaa ggc aag aac atg gct ttc aaa tgg	544
Ile Lys Leu Ser Asp Ile Pro Glu Gly Lys Asn Met Ala Phe Lys Trp	
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Arg Gly Lys Pro Leu Phe Val Arg His Arg Thr Gln Lys Glu Ile Glu	
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Gln Glu Ala Ala Val Glu Leu Ser Gln Leu Arg Asp Pro Gln His Asp	
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Leu Asp Arg Val Lys Lys Pro Glu Trp Val Ile Leu Ile Gly Val Cys	
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Thr His Leu Gly Cys Val Pro Ile Ala Asn Ala Gly Asp Phe Gly Gly	
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Tyr Tyr Cys Pro Cys His Gly Ser His Tyr Asp Ala Ser Gly Arg Ile	
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Arg Leu Gly Pro Ala Pro Leu Asn Leu Glu Val Pro Thr Tyr Glu Phe	
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Thr Ser Asp Asp Met Val Ile Val Gly *	
247 252	
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 2 7 12 17

tcg act gcg gcc ttg ccc gaa gcc ctt ttg tgc agc tcc gcg ccc gca 151  
 Ser Thr Ala Ala Leu Pro Glu Ala Leu Leu Cys Ser Ser Ala Pro Ala  
 18 23 28 33

gcc cga cgc ccc agc ttg tgc ggg gcc acg gga ggg tca tgc gcg gat 199  
 Ala Arg Arg Pro Ser Leu Cys Gly Ala Thr Gly Gly Ser Cys Ala Asp  
 34 39 44 49

ttc gac tcg ggt gtg gat ttc gtc cgt aga gag agc agc ggt ctg tgg 247  
 Phe Asp Ser Gly Val Asp Phe Val Arg Arg Glu Ser Ser Gly Leu Trp  
 50 55 60 65

ggc cca cag cct cca ctt tct cct gtt aaa aat tat act gag atg ttt 295  
 Gly Pro Gln Pro Pro Leu Ser Pro Val Lys Asn Tyr Thr Glu Met Phe  
 66 71 76 81

cag gac cca gtg gct ttt aag gat gtg gct gtg aac ttc acc cag gag 343  
 Gln Asp Pro Val Ala Phe Lys Asp Val Ala Val Asn Phe Thr Gln Glu  
 82 87 92 97

gag tgg gct ttg ctg gat att tcc cag aag aat ctc tac agg gaa gtg 391  
 Glu Trp Ala Leu Leu Asp Ile Ser Gln Lys Asn Leu Tyr Arg Glu Val  
 98 103 108 113

atg ctg gaa act ttc tgg aac ctg acc tct ata gga aaa aag tgg aaa 439  
 Met Leu Glu Thr Phe Trp Asn Leu Thr Ser Ile Gly Lys Lys Trp Lys  
 114 119 124 129

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 Asp Gln Asn Ile Glu Tyr Glu Tyr Gln Asn Pro Arg Arg Asn Phe Arg  
 130 135 140 145

agt gtc aca gaa gag aaa gtc aat gaa att aaa gaa gac agt cat tgt 535  
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 146 151 156 161

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Gly Glu Thr Phe Thr Pro Val Pro Asp Asp Arg Leu Asn Phe Gln Lys	
162 167 172 177	
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Lys Lys Ala Ser Pro Glu Val Lys Ser Cys Asp Ser Phe Val Cys Glu	
178 183 188 193	
gtt ggc cta ggt aac tca tct tct aat atg aac atc aga ggt gac act	679
Val Gly Leu Gly Asn Ser Ser Ser Asn Met Asn Ile Arg Gly Asp Thr	
194 199 204 209	
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Gly His Lys Ala Cys Glu Cys Gln Glu Tyr Gly Pro Lys Pro Trp Lys	
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Ser Gln Gln Pro Lys Lys Ala Phe Arg Tyr His Pro Ser Leu Arg Thr	
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Gln Glu Arg Asp His Thr Gly Lys Lys Pro Tyr Ala Cys Lys Glu Cys	
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gga aaa aac att att tac cat tca agc att caa aga cac atg gta gtg	871
Gly Lys Asn Ile Ile Tyr His Ser Ser Ile Gln Arg His Met Val Val	
258 263 268 273	
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His Ser Gly Asp Gly Pro Tyr Lys Cys Lys Phe Cys Gly Lys Ala Phe	
274 279 284 289	
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His Cys Leu Ser Leu Tyr Leu Ile His Glu Arg Thr His Thr Gly Glu	
290 295 300 305	
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Lys Pro Tyr Glu Cys Lys Gln Cys Gly Lys Ser Phe Ser Tyr Ser Ala	
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acc cat cga ata cat gaa aga act cac att gga gaa aag cct tat gaa	1063
Thr His Arg Ile His Glu Arg Thr His Ile Gly Glu Lys Pro Tyr Glu	
322 327 332 337	
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Cys Gln Glu Cys Gly Lys Ala Phe His Ser Pro Arg Ser Cys His Arg	
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Gly Lys Ala Phe Met Cys Pro Arg Tyr Val Arg Arg His Glu Arg Thr	
370 375 380 385	
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His	Ser	Arg	Lys	Lys	Leu	Tyr	Glu	Cys	Lys	Gln	Cys	Gly	Lys	Ala	Leu
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Arg	Pro	Tyr	Glu	Cys	Lys	Thr	Cys	Gly	Lys	Gly	Phe	Tyr	Ser	Ala	Lys	
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Arg	Ser	Ala	Ser	Gln	Leu	Arg	Ile	His	Arg	Arg	Ile	His	Thr	Gly	Glu	
514					519					524					529	

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Asn	Phe	Arg	Phe	His	Glu	Arg	Thr	His	Asn	Gly	Glu	Lys	Pro	Tyr	Glu	
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Cys	Lys	Glu	Cys	Arg	Lys	Ala	Phe	Ser	Leu	Pro	Thr	Ser	Phe	His	Arg	
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His	Glu	Lys	Thr	Leu	Glu	Gly	Asn	Pro	Met	Lys	Ala	Ser	Asn	Val	Ala	
578					583					588					593	

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Lys	Leu	Ser	Leu	Leu	Pro	Val	Leu	Phe	Asn	Ile	Met	Lys	Glu	Phe	Thr	
594					599					604					609	

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Leu Pro Leu Leu Phe Asn Ile Met Lys Gly Leu Thr Trp Glu Arg Asn				
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cct atg agt gta tgc cat gtg gga aag cct tca ttt ttc tag ttgcttt		2024		
Pro Met Ser Val Cys His Val Gly Lys Pro Ser Phe Phe *				
642	647	652		
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	atg ctg ctc	
	Met Leu Leu	
	1	
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Gly Ser Leu Leu Pro Val Lys Ile Ile Glu Thr Asp Phe Glu Lys Ala		
4	9	14
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His Arg Ser Lys Lys Ile Leu Ser Leu Cys Asn Thr Phe Gly Gly Gly		
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Val Phe Leu Ala Thr Cys Phe Asn Ala Leu Leu Pro Ala Val Arg Glu	
36 41 46 51	
aag ctc cag aag gtc ctg agc ctc ggc cac atc agc acc gac tac ccg	546
Lys Leu Gln Lys Val Leu Ser Leu Gly His Ile Ser Thr Asp Tyr Pro	
52 57 62 67	
ctg gcc gaa acc atc ctc ctg ctg ggc ttc ttc atg acc gtc ttc ctg	594
Leu Ala Glu Thr Ile Leu Leu Leu Gly Phe Phe Met Thr Val Phe Leu	
68 73 78 83	
gag cag ctg atc ctg acc ttc cgc aag gag aag ccg tcc ttc atc gac	642
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Val Phe Glu Gly Leu Ala Leu Gly Leu Gln Glu Glu Gly Glu Lys Val	
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Val Ser Leu Phe Val Gly Val Ala Val His Glu Thr Leu Val Ala Val	
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Val Phe Leu Lys Trp \*  
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Gln Phe Pro His Leu Glu Ser Arg Asn Asp Asn Arg Thr Cys His Trp  
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Cys Asp Thr Glu Ile His Ile Val Asn Ala Thr Ile Ser Asp Thr Asp  
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Gln Gln Lys Ala Gly Phe Lys Glu Gly Trp Leu Ala Glu Ala Ser Glu	
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Ile Ala Asp Leu Glu Arg Gln Leu Thr Ala Lys Ser Glu Ala Ile Glu	
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Pro Tyr Ala Ser Val Ser Pro Ser Leu Ser Ser Ser Ser Ser Ser Gly				
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1453

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cagtctccac	accaaacagt	caacaaaaca	caaaccctga	aggaaaacct	ttccatata	6106

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cccaggetat gcattgaaga gttttccact gtatacattt ttatccagat gaaggtattt 6166
ttatatatttg acaataggaa acagtgaacca ttttcagagt aatcaaactt ggaacaaatg 6226
aaacatcttt tagccaccac caccctgttg caattaagac aaccgtgggg gaacacacca 6286
ctttttactg ttgaaaccaa cacaacgttg aaatccaggg ttatacgcag actccgattc 6346
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<210> 106
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cgccctctct gcacgaaagc gtctaagcct tggcgacgcc gccctggggg acccacgtca 180
ggcctgggat agggaccgct gtccccgggt cctaccaat gtcgcccgtc gctcccggcc 240
cagctctacc cgcagagtct g atg gca gcg gcc act ctg agg acg cca act 291
                        Met Ala Ala Ala Thr Leu Arg Thr Pro Thr
                        1 5

cag ggc act gtg acc ttt gaa gat gtg gcc gta cac ttc tcc tgg gag 339
Gln Gly Thr Val Thr Phe Glu Asp Val Ala Val His Phe Ser Trp Glu
11 16 21 26

gaa tgg ggt ctc ctt gat gag gct caa aga tgc ctg tac cgt gat gtg 387
Glu Trp Gly Leu Leu Asp Glu Ala Gln Arg Cys Leu Tyr Arg Asp Val
27 32 37 42

atg ctg gag aac ttg gct ctt tta acc tct cta gat gtt cat cat cag 435
Met Leu Glu Asn Leu Ala Leu Leu Thr Ser Leu Asp Val His His Gln
43 48 53 58

aag cag cac ctt gga gaa aaa cat ttc ata agc aat gtg ggc cga gcc 483

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Lys	Gln	His	Leu	Gly	Glu	Lys	His	Phe	Ile	Ser	Asn	Val	Gly	Arg	Ala	
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ttg	ttt	gtg	aag	acc	tgc	aca	ttc	cat	gtg	tca	ggg	gag	cct	tcc	acc	531
Leu	Phe	Val	Lys	Thr	Cys	Thr	Phe	His	Val	Ser	Gly	Glu	Pro	Ser	Thr	
75					80					85					90	
tgc	aga	gaa	ttt	ggg	aag	gac	ttc	ctg	gcc	aag	ttg	gga	ttt	ctc	cat	579
Cys	Arg	Glu	Phe	Gly	Lys	Asp	Phe	Leu	Ala	Lys	Leu	Gly	Phe	Leu	His	
91					96					101					106	
caa	cag	gct	gct	cac	act	ggg	gag	caa	tcc	aat	agc	aaa	agc	gac	ggc	627
Gln	Gln	Ala	Ala	His	Thr	Gly	Glu	Gln	Ser	Asn	Ser	Lys	Ser	Asp	Gly	
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ggg	gcc	atc	agt	cac	aga	gga	aaa	act	cat	tac	aac	tgt	gga	gaa	cac	675
Gly	Ala	Ile	Ser	His	Arg	Gly	Lys	Thr	His	Tyr	Asn	Cys	Gly	Glu	His	
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Thr	Lys	Ala	Phe	Ser	Gly	Lys	His	Thr	Leu	Val	Gln	Gln	Gln	Arg	Thr	
139					144					149					154	
ctc	act	aca	gaa	aga	tgt	tac	ata	tgc	agt	gaa	tgt	ggg	aaa	tcc	ttt	771
Leu	Thr	Thr	Glu	Arg	Cys	Tyr	Ile	Cys	Ser	Glu	Cys	Gly	Lys	Ser	Phe	
155					160					165					170	
agc	aaa	agc	tac	agt	ctc	aat	gac	cat	tgg	aga	ctt	cac	act	gga	gaa	819
Ser	Lys	Ser	Tyr	Ser	Leu	Asn	Asp	His	Trp	Arg	Leu	His	Thr	Gly	Glu	
171					176					181					186	
aag	cct	tat	gaa	tgt	cga	gag	tgt	ggg	aag	tcc	ttt	agg	caa	agc	tct	867
Lys	Pro	Tyr	Glu	Cys	Arg	Glu	Cys	Gly	Lys	Ser	Phe	Arg	Gln	Ser	Ser	
187					192					197					202	
agt	ctc	att	caa	cac	cgg	aga	ggc	cac	act	gca	gta	cga	cct	cat	gag	915
Ser	Leu	Ile	Gln	His	Arg	Arg	Gly	His	Thr	Ala	Val	Arg	Pro	His	Glu	
203					208					213					218	
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Gly	Asp	Glu	Cys	Gly	Lys	Leu	Phe	Ser	Asn	Pro	Ser	Asn	Leu	Ile	Lys	
219					224					229					234	
cat	cgg	aga	gtt	cac	act	ggg	gaa	agg	cca	tat	gag	tgc	agc	gaa	tgt	1011
His	Arg	Arg	Val	His	Thr	Gly	Glu	Arg	Pro	Tyr	Glu	Cys	Ser	Glu	Cys	
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ggg	aaa	tcc	ttt	aac	caa	agg	tct	gca	ctc	ctt	caa	cat	cgg	gga	ggc	1059
Gly	Lys	Ser	Phe	Asn	Gln	Arg	Ser	Ala	Leu	Leu	Gln	His	Arg	Gly	Gly	
251					256					261					266	
cac	act	ggg	gag	agg	cct	tat	gag	tgc	agt	gaa	tgt	ggg	aag	ttt	ttt	1107
His	Thr	Gly	Glu	Arg	Pro	Tyr	Glu	Cys	Ser	Glu	Cys	Gly	Lys	Phe	Phe	
267					272					277					282	
ccc	tac	agc	tcc	agt	ctc	cga	aaa	cac	cag	aga	gtt	cac	act	gga	tca	1155
Pro	Tyr	Ser	Ser	Ser	Leu	Arg	Lys	His	Gln	Arg	Val	His	Thr	Gly	Ser	

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aga ccc tat gag tgc agt gaa tgt ggg aaa tcc ttt act caa aat tcc				1203
Arg Pro Tyr Glu Cys Ser Glu Cys Gly Lys Ser Phe Thr Gln Asn Ser				
299	304	309	314	
ggc ctc att aag cac agg agg gtt cac act ggg gag aag cct tat gag				1251
Gly Leu Ile Lys His Arg Arg Val His Thr Gly Glu Lys Pro Tyr Glu				
315	320	325	330	
tgc acg gaa tgt ggg aaa tcc ttt agc cat aac tcc agc ctt att aaa				1299
Cys Thr Glu Cys Gly Lys Ser Phe Ser His Asn Ser Ser Leu Ile Lys				
331	336	341	346	
cat cag aga att cat agt cga taa aaggcttatg agtggcaaat gtggaaaatc				1353
His Gln Arg Ile His Ser Arg *				
347	352			
tgtagcacc ctggagaaag tccttgagta cacagtgaat gtcagaaagc ttcagctgaa				1413
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gtgcatctgc caggagaccc agctccagca cgtggaggac tacagccgga ttctgtgtcc	180
atcttctct cctcattgac tctgc atg aag ggg att tct ggt gga gta agg	232
Met Lys Gly Ile Ser Gly Gly Val Arg	
1 5	
gta gca gct ctt gcc gca cgt gca gag aga gag gaa ctt cca gtg ccc	280
Val Ala Ala Leu Ala Ala Arg Ala Glu Arg Glu Glu Leu Pro Val Pro	
10 15 20 25	
gct atg gag cca cag ccc aca gca tgg gga agt ccc cat cca gag gca	328
Ala Met Glu Pro Gln Pro Thr Ala Trp Gly Ser Pro His Pro Glu Ala	
26 31 36 41	
gtg ctg cag cta gag gta gct cca gag tcc tcc ggg ccc tgc acc gat	376
Val Leu Gln Leu Glu Val Ala Pro Glu Ser Ser Gly Pro Cys Thr Asp	
42 47 52 57	



aca gcc aaa gac cag caa agc gac aag ctg cca gac ctc atg cca cct	424
Thr Ala Lys Asp Gln Gln Ser Asp Lys Leu Pro Asp Leu Met Pro Pro	
58 63 68 73	
gct gta gcc act ggg ctc agc cct gga gct gag agc atc gct gga gat	472
Ala Val Ala Thr Gly Leu Ser Pro Gly Ala Glu Ser Ile Ala Gly Asp	
74 79 84 89	
aga cgt ggc aga gaa gag gtt gcg agc atg gcc cca gcc agc agc tcc	520
Arg Arg Gly Arg Glu Glu Val Ala Ser Met Ala Pro Ala Ser Ser Ser	
90 95 100 105	
cac gct gcc cct agt cct ggg cat gga gcg agc ctt ggt gtc aga gac	568
His Ala Ala Pro Ser Pro Gly His Gly Ala Ser Leu Gly Val Arg Asp	
106 111 116 121	
cag ggt gtg cag tct gag ctc ctc tac ctt act aaa gag agg cct ctt	616
Gln Gly Val Gln Ser Glu Leu Leu Tyr Leu Thr Lys Glu Arg Pro Leu	
122 127 132 137	
tta ttt acc aga gcc aca gcc ctg ctg cct cag gac ctt ttc att ctg	664
Leu Phe Thr Arg Ala Thr Ala Leu Leu Pro Gln Asp Leu Phe Ile Leu	
138 143 148 153	
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Pro Val Leu Gly Leu Ser Ile Cys Lys Leu Glu Val Leu Arg Ala Gly	
154 159 164 169	
aaa gga ggc tgt gag gaa ggg ttc ggg cag ctc ctc ctg ctc tca gag	760
Lys Gly Gly Cys Glu Glu Gly Phe Gly Gln Leu Leu Leu Leu Ser Glu	
170 175 180 185	
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Val Ala Ser Ser Ser Arg His Gly Gly Leu Ser Thr Thr Gly Leu Leu	
186 191 196 201	
ggc tat ttg ccc ctg att tgc tcc ctg gta cgg gct ctt gtt aac agg	856
Gly Tyr Leu Pro Leu Ile Cys Ser Leu Val Arg Ala Leu Val Asn Arg	
202 207 212 217	
cag gca agg ggt gcg ggg acc agg caa ggg ctt caa agg gta cag tac	904
Gln Ala Arg Gly Ala Gly Thr Arg Gln Gly Leu Gln Arg Val Gln Tyr	
218 223 228 233	
caa atc ttc caa act cag cac ttg tgc cct ggg gtc tcc aaa ctg tct	952
Gln Ile Phe Gln Thr Gln His Leu Cys Pro Gly Val Ser Lys Leu Ser	
234 239 244 249	
tct gcc cta gga ttt att cat act gtt aaa tta cca gtt tat gca aat	1000
Ser Ala Leu Gly Phe Ile His Thr Val Lys Leu Pro Val Tyr Ala Asn	
250 255 260 265	
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Asp Met *	
266	

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                                     1

gct ctg ctc ctc ctg acc ctc ctc act cac tct gca gtg tca gtg gtc      105
Ala Leu Leu Leu Leu Thr Leu Leu Thr His Ser Ala Val Ser Val Val
  4                      9                      14                      19

cag gca ggg ctg act cag cca ccc tcg gtg tcc aag ggc ttg aga cag      153
Gln Ala Gly Leu Thr Gln Pro Pro Ser Val Ser Lys Gly Leu Arg Gln
  20                      25                      30                      35

acc gcc aca ctc acc tgc act ggg aac agc aac aat gtt ggc gac caa      201
Thr Ala Thr Leu Thr Cys Thr Gly Asn Ser Asn Asn Val Gly Asp Gln
  36                      41                      46                      51

gga gca tct tgg ctg cag cag cac cag ggc cac cct ccc aaa ctc ctc      249
Gly Ala Ser Trp Leu Gln Gln His Gln Gly His Pro Pro Lys Leu Leu
  52                      57                      62                      67

tcc tac agg aat aac aac cgg ccc tca ggg atc tca gag aga tta tct      297
Ser Tyr Arg Asn Asn Asn Arg Pro Ser Gly Ile Ser Glu Arg Leu Ser
  68                      73                      78                      83

gca tcc agg tca gga aac aca gcc tcc ctg acc att act gga ctc cag      345
Ala Ser Arg Ser Gly Asn Thr Ala Ser Leu Thr Ile Thr Gly Leu Gln
  84                      89                      94                      99

cct gag gac gag gct gac tat tac tgc tca gca tgg gac agc agc ctc      393
Pro Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ala Trp Asp Ser Ser Leu
  100                      105                      110                      115

agt gct tgg gtg ttc ggc gga ggg acc aag ctg acc gtc cta ggt cag      441
Ser Ala Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
  116                      121                      126                      131

ccc aag gct gcc ccc tcg gtc act ctg ttc ccg ccc tcc tct gag gag      489
Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu
  132                      137                      142                      147

ctt caa gcc aac aag gcc aca ctg gtg tgt ctc ata agt gac ttc tac      537
Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr
  148                      153                      158                      163

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ccg gga gcc gtg aca gtg gcc tgg aag gca gat agc agc ccc gtc aag 585  
Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys  
164 169 174 179

gcg gga gtg gag acc acc aca ccc tcc aaa caa agc aac aac aag tac 633  
Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr  
180 185 190 195

gcg gcc agc agc tac ctg agc ctg acg cct gag cag tgg aag tcc cac 681  
Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His  
196 201 206 211

aga agc tac agc tgc cag gtc acg cat gaa ggg agc acc gtg gag aag 729  
Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys  
212 217 222 227

aca gtg gcc cct aca gaa tgt tca tag gttct caaccctcac cccaccacg 781  
Thr Val Ala Pro Thr Glu Cys Ser \*  
228 233

ggagactaga gctgcaggat cccaggggag ggggtctctcc tcccaccca aggcattcaag 841

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<211> 1941

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<213> Homo sapiens

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<222> (203) .. (1588)

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ctctgcttgc tccagaggcc tcgtcctaata ccacctcggc tgacggcgcg ggatccctgg 180

ctccgcgagc ctcagcctca cc atg tgt gtc agg agc tgt ttc cag tcc ccc 232  
Met Cys Val Arg Ser Cys Phe Gln Ser Pro  
1 5

cgt ctc cag tgg gtg tgg aga aca gcc ttc ctg aaa cac acc cag cgc 280  
Arg Leu Gln Trp Val Trp Arg Thr Ala Phe Leu Lys His Thr Gln Arg  
11 16 21 26

agg cac cag ggg tcc cac cga tgg aca cac ctt gga ggc agc acc tac 328  
Arg His Gln Gly Ser His Arg Trp Thr His Leu Gly Gly Ser Thr Tyr  
27 32 37 42

aga gcg gtg att ttc gac atg ggc gga gtt ctc att cct tct cca ggg	376
Arg Ala Val Ile Phe Asp Met Gly Gly Val Leu Ile Pro Ser Pro Gly	
43 48 53 58	
aga gtc gct gca gaa tgg gag gta cag aat cgt atc cct tct gga act	424
Arg Val Ala Ala Glu Trp Glu Val Gln Asn Arg Ile Pro Ser Gly Thr	
59 64 69 74	
ata tta aag gcc ttg atg gaa ggt ggt gaa aat ggg ccc tgg atg aga	472
Ile Leu Lys Ala Leu Met Glu Gly Gly Glu Asn Gly Pro Trp Met Arg	
75 80 85 90	
ttt atg aga gca gaa ata aca gca gag ggt ttt tta cga gaa ttt ggg	520
Phe Met Arg Ala Glu Ile Thr Ala Glu Gly Phe Leu Arg Glu Phe Gly	
91 96 101 106	
aga ctt tgc tct gaa atg tta aag acc tcc gtg cct gtg gac tca ttt	568
Arg Leu Cys Ser Glu Met Leu Lys Thr Ser Val Pro Val Asp Ser Phe	
107 112 117 122	
ttc tct ctg ttg acc agt gag cga gtg gca aag cag ttc cca gtg atg	616
Phe Ser Leu Leu Thr Ser Glu Arg Val Ala Lys Gln Phe Pro Val Met	
123 128 133 138	
act gag gcc ata act caa att cgg gca aaa ggt ctt cag act gca gtc	664
Thr Glu Ala Ile Thr Gln Ile Arg Ala Lys Gly Leu Gln Thr Ala Val	
139 144 149 154	
ttg agc aat aat ttt tat ctt ccc aac cag aaa agc ttt ttg ccc ctg	712
Leu Ser Asn Asn Phe Tyr Leu Pro Asn Gln Lys Ser Phe Leu Pro Leu	
155 160 165 170	
gac cgg aaa cag ttt gat gtg att gtg gag tcc tgc atg gaa ggg atc	760
Asp Arg Lys Gln Phe Asp Val Ile Val Glu Ser Cys Met Glu Gly Ile	
171 176 181 186	
tgt aag cca gac cct agg atc tac aag ctg tgc ttg gag cag ctc ggc	808
Cys Lys Pro Asp Pro Arg Ile Tyr Lys Leu Cys Leu Glu Gln Leu Gly	
187 192 197 202	
ctg cag ccc tct gag tcc atc ttt ctt gat gac ctt gga aca aat cta	856
Leu Gln Pro Ser Glu Ser Ile Phe Leu Asp Asp Leu Gly Thr Asn Leu	
203 208 213 218	
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Lys Glu Ala Ala Arg Leu Gly Ile His Thr Ile Lys Val Asn Asp Pro	
219 224 229 234	
gag act gca gta aag gaa tta gaa gct ctc ttg ggt ttt aca ttg aga	952
Glu Thr Ala Val Lys Glu Leu Glu Ala Leu Leu Gly Phe Thr Leu Arg	
235 240 245 250	
gta ggt gtt cca aac act cgg cct gtg aaa aag acg atg gaa att ccg	1000
Val Gly Val Pro Asn Thr Arg Pro Val Lys Lys Thr Met Glu Ile Pro	
251 256 261 266	
aaa gat tcc ttg cag aag tac ctc aaa gac tta ctg ggt atc cag acc	1048

Lys Asp Ser Leu Gln	Lys Tyr Leu Lys Asp	Leu Leu Gly Ile Gln Thr	
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aca ggc cca ttg gaa cta ctt cag ttt gat cac ggg cag tca aat cca			1096
Thr Gly Pro Leu Glu Leu Leu Gln Phe Asp His Gly Gln Ser Asn Pro			
283	288	293	298
act tac tac atc agg ctg gct aat cgt gat cta gtt ctg agg aag aag			1144
Thr Tyr Tyr Ile Arg Leu Ala Asn Arg Asp Leu Val Leu Arg Lys Lys			
299	304	309	314
ccc cca ggg aca ctc ctt cca tct gcc cat gcc ata gag agg gag ttc			1192
Pro Pro Gly Thr Leu Leu Pro Ser Ala His Ala Ile Glu Arg Glu Phe			
315	320	325	330
agg att atg aaa gcc ctt gca aat gct gga gta cct gtc cct aac gtt			1240
Arg Ile Met Lys Ala Leu Ala Asn Ala Gly Val Pro Val Pro Asn Val			
331	336	341	346
ctt gat ctc tgt gaa gat tca agt gtc att ggc acc ccc ttc tat gtg			1288
Leu Asp Leu Cys Glu Asp Ser Ser Val Ile Gly Thr Pro Phe Tyr Val			
347	352	357	362
atg gag tac tgc cca ggt ctc atc tac aaa gac cct tcc ctg cca ggc			1336
Met Glu Tyr Cys Pro Gly Leu Ile Tyr Lys Asp Pro Ser Leu Pro Gly			
363	368	373	378
ttg gag ccc agc cac aga cga gcc ata tac act gcc atg aac aca gtc			1384
Leu Glu Pro Ser His Arg Arg Ala Ile Tyr Thr Ala Met Asn Thr Val			
379	384	389	394
ctg tgc aaa att cac agt gtg gat ctg cag gct gtg gga ctt gaa gac			1432
Leu Cys Lys Ile His Ser Val Asp Leu Gln Ala Val Gly Leu Glu Asp			
395	400	405	410
tat ggg aag caa ggc tgc aca acc tgg tgt ttc atc cag aag agc cag			1480
Tyr Gly Lys Gln Gly Ser Thr Thr Trp Cys Phe Ile Gln Lys Ser Gln			
411	416	421	426
agg tgc ttg ctg tcc ttg act ggg aac ttt cta cct tgg gcg acc ccc			1528
Arg Cys Leu Leu Ser Leu Thr Gly Asn Phe Leu Pro Trp Ala Thr Pro			
427	432	437	442
ttg ctg atg tgg cct aca gct gcc tgg ctc att acc tgc cat cca gtt			1576
Leu Leu Met Trp Pro Thr Ala Ala Trp Leu Ile Thr Cys His Pro Val			
443	448	453	458
ttc ccg tgc tga gag gtattaatga ctgtgacttg acacagctgg gaatccctgc			1631
Phe Pro Cys *			
459			
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gaacttctat atggcttttt cctttttccg tgtggctgca atcctacagg gagtctacaa			1751
gcgatcactc acaggtaatg ggatggctgc cctgaagagc cactgcgggc attctgccga			1811

catggaagcc atcacaaacg gcatgatgaa cctgaatcgc cagcgggcattc agcaccttgt	1871
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tcagtgtttt	tctgaccgaa	gttctcattt	cctgaca	atg gaa	atg gaa	caa gaa											235
				Met	Glu	Met	Glu	Gln	Glu								
				1													
aaa atg acc atg aat aag gaa ttg agt cca gac gcg gct gct tac tgc												283					
Lys Met Thr Met Asn Lys Glu Leu Ser Pro Asp Ala Ala Ala Tyr Cys																	
7												12	17	22			
tgc tcg gcc tgc cac ggc gat gag acc tgg agt tac aac cac ccc atc												331					
Cys Ser Ala Cys His Gly Asp Glu Thr Trp Ser Tyr Asn His Pro Ile																	
23												28	33	38			
cgg ggc cgg gcc aag tct cgc agc ctg tct gcc tcg ccc gcc ctg ggg												379					
Arg Gly Arg Ala Lys Ser Arg Ser Leu Ser Ala Ser Pro Ala Leu Gly																	
39												44	49	54			
agc acc aag gag ttc agg agg aca cgc tct ctt cat ggg cca tgc ccg												427					
Ser Thr Lys Glu Phe Arg Arg Thr Arg Ser Leu His Gly Pro Cys Pro																	
55												60	65	70			
gtg acc act ttt gga cca aag gcc tgt gtg ctg cag aac ccc cag acc												475					
Val Thr Thr Phe Gly Pro Lys Ala Cys Val Leu Gln Asn Pro Gln Thr																	
71												76	81	86			
atc atg cac att cag gac ccc gcg agc cag cgg ctg acg tgg aac aag												523					
Ile Met His Ile Gln Asp Pro Ala Ser Gln Arg Leu Thr Trp Asn Lys																	
87												92	97	102			
tcc cca aag agc gtc ctt gtc atc aag aag atg aga gat gcc agc cta												571					
Ser Pro Lys Ser Val Leu Val Ile Lys Lys Met Arg Asp Ala Ser Leu																	
103												108	113	118			

ctg cag ccg ttc aag gag ctc tgc acg cac ctc atg gag gag aac atg	619
Leu Gln Pro Phe Lys Glu Leu Cys Thr His Leu Met Glu Glu Asn Met	
119 124 129 134	
atc gtg tat gtg gaa aag aaa gtg cta gaa gac cct gcc atc gcc agc	667
Ile Val Tyr Val Glu Lys Lys Val Leu Glu Asp Pro Ala Ile Ala Ser	
135 140 145 150	
gat gaa agc ttt ggg gca gtg aag aag aaa ttc tgt acc ttt cga gaa	715
Asp Glu Ser Phe Gly Ala Val Lys Lys Lys Phe Cys Thr Phe Arg Glu	
151 156 161 166	
gat tat gat gac att tcc aat cag ata gac ttc atc atc tgc ctg ggg	763
Asp Tyr Asp Asp Ile Ser Asn Gln Ile Asp Phe Ile Ile Cys Leu Gly	
167 172 177 182	
gga gac ggg acg ctg ctg tac gct tcc tcg ctt ttc cag gga acg cag	811
Gly Asp Gly Thr Leu Leu Tyr Ala Ser Ser Leu Phe Gln Gly Thr Gln	
183 188 193 198	
ctg ttg ttc tcc gga gtc ggc tga aggtcagggt ggtgaaggag ctccggggga	865
Leu Leu Phe Ser Gly Val Gly *	
199 204	
agaagacggc cgtgcacaat gggctgggtg agaaaggctc gcaggctgca ggccctggaca	925
tggatgtcgg gaagcaggcc atgcagtacc aggtcctgaa tgaggtggtg attgacagag	985
gccccctctc ctacctgtcc aatgtggatg tctacctgga cggacacctc atcaccacgg	1045
tgcaggggcga cggagtgatc gtgtccaccc cgacgggacag cacggcgatat gcggccgcaa	1105
gctta	1110

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (602)..(2251)

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ttatgggtct ttcaactctc gtatatattt aaatgcaatt ggagccccgc agggaatacc	180
agatcaattt aaagcttgaa atcaaatagt tacaggactg aagtcaatat tttggtagat	240
gacagtcaat aaaaatgtaa attagatata ctacatctat tacaaccaac agcaacgagc	300

ttttcatgag	ttaaaaagaa	aaactcatgt	cggtcccagc	cctggggcta	cctgacctga	360
caaaactctt	tacactccat	gtgtcaaaaa	gagaaaaaat	ggcagttgga	gttttaaccc	420
agactgtggg	gccctggcca	aggccagtgg	cctatctctc	aaaacaacta	gatgggtttc	480
caaaggctgg	ccactatgtc	taaggacctt	ggcagcaaca	gccctgtag	cacaagaagc	540
agataaacta	acccttgggc	aaaacctgaa	tataaaggcc	ccccatgctg	tggttaacttt	600
g	atg act acc gaa gga cat cat tgg cta aca aat gct aga tta acc	646				
	Met Thr Thr Glu Gly His His Trp Leu Thr Asn Ala Arg Leu Thr					
	1 5 10					
aag tac caa agc ttg cca tgt gaa aat ccc cac ata act att gaa gtc	694					
Lys Tyr Gln Ser Leu Pro Cys Glu Asn Pro His Ile Thr Ile Glu Val						
16 21 26 31						
tgt aac acc cta aat ccc acc acc ctg ctc cca gta tca gag agc ccg	742					
Cys Asn Thr Leu Asn Pro Thr Thr Leu Leu Pro Val Ser Glu Ser Pro						
32 37 42 47						
ggc gag cat aac tgt gta gag gtg ttg gac tca gtc tat tct agc aga	790					
Gly Glu His Asn Cys Val Glu Val Leu Asp Ser Val Tyr Ser Ser Arg						
48 53 58 63						
cct gac ctt cgg gac cag cca tgg gca tca tca gta gac tgg gag tta	838					
Pro Asp Leu Arg Asp Gln Pro Trp Ala Ser Ser Val Asp Trp Glu Leu						
64 69 74 79						
tac atg gac ggg agc agc ttc atc aac tca caa gga gaa aga tgt gca	886					
Tyr Met Asp Gly Ser Ser Phe Ile Asn Ser Gln Gly Glu Arg Cys Ala						
80 85 90 95						
gga tat gcg gtg gta act ttg gat gct gtc att aaa gcc aaa ctg tgg	934					
Gly Tyr Ala Val Val Thr Leu Asp Ala Val Ile Lys Ala Lys Leu Trp						
96 101 106 111						
cta cag ggc act tca gcc cag aag gct gag ctc att gct tta act cgg	982					
Leu Gln Gly Thr Ser Ala Gln Lys Ala Glu Leu Ile Ala Leu Thr Arg						
112 117 122 127						
gct gta gaa ctc agt gaa ggg caa gag tca ctt gaa gaa ttg tta ggc	1030					
Ala Val Glu Leu Ser Glu Gly Gln Glu Ser Leu Glu Glu Leu Leu Gly						
128 133 138 143						
cgg tac ttc tac gtc tca cac ttg cca gcc ttt gcc aaa gca gta gca	1078					
Arg Tyr Phe Tyr Val Ser His Leu Pro Ala Phe Ala Lys Ala Val Ala						
144 149 154 159						
caa ctg tgc att aca tgc cga cag cac aat gcg agg caa agc ccc act	1126					
Gln Leu Cys Ile Thr Cys Arg Gln His Asn Ala Arg Gln Ser Pro Thr						
160 165 170 175						
gtt tgc ccc cac ata caa gct tat gga gca gct cct ttt gag gat ctt	1174					
Val Ser Pro His Ile Gln Ala Tyr Gly Ala Ala Pro Phe Glu Asp Leu						
176 181 186 191						



cag gtg gat ttc aca gaa atg cca aaa tgt gga ggt aac aag tat ttg	1222
Gln Val Asp Phe Thr Glu Met Pro Lys Cys Gly Gly Asn Lys Tyr Leu	
192 197 202 207	
ctg gtt ctt acg tgt act tac tct ggg tgg gtg gag gct tat cca aca	1270
Leu Val Leu Thr Cys Thr Tyr Ser Gly Trp Val Glu Ala Tyr Pro Thr	
208 213 218 223	
cga act gaa aag gcc tac gaa gta acc cgt gtg ctt ctc cga gat ctt	1318
Arg Thr Glu Lys Ala Tyr Glu Val Thr Arg Val Leu Leu Arg Asp Leu	
224 229 234 239	
att cct agg ttt gga ctg ccc tta cga att ggc tca cat aac ggg ccg	1366
Ile Pro Arg Phe Gly Leu Pro Leu Arg Ile Gly Ser His Asn Gly Pro	
240 245 250 255	
gtg ttt gtg gct gac ttg gac tgt gtg gaa atc aat gtg gat act ggt	1414
Val Phe Val Ala Asp Leu Asp Cys Val Glu Ile Asn Val Asp Thr Gly	
256 261 266 271	
gtc att tgg gcc act tgg ata aaa aat gaa aag gat cca gtg cag ctt	1462
Val Ile Trp Ala Thr Trp Ile Lys Asn Glu Lys Asp Pro Val Gln Leu	
272 277 282 287	
cag aaa gga aaa agt ggc cct tcc tgt act aag gga caa tgt aac ccc	1510
Gln Lys Gly Lys Ser Gly Pro Ser Cys Thr Lys Gly Gln Cys Asn Pro	
288 293 298 303	
tta gag cta gta ata acc aat ccc ctt gat cct cgc tgg aaa aaa ggg	1558
Leu Glu Leu Val Ile Thr Asn Pro Leu Asp Pro Arg Trp Lys Lys Gly	
304 309 314 319	
gag cgt gtg acc tta gga atc aat ggg gct gga ctg aat ccc cga gta	1606
Glu Arg Val Thr Leu Gly Ile Asn Gly Ala Gly Leu Asn Pro Arg Val	
320 325 330 335	
aat atc ttg gtt cga gga gaa gtt tac aaa tgc tct ctt gag cca gtg	1654
Asn Ile Leu Val Arg Gly Glu Val Tyr Lys Cys Ser Leu Glu Pro Val	
336 341 346 351	
ttt caa act ttc tat gat gaa cta aat gtg cca ata aca gaa ttt cca	1702
Phe Gln Thr Phe Tyr Asp Glu Leu Asn Val Pro Ile Thr Glu Phe Pro	
352 357 362 367	
gga aaa aca aga aat ttg ttt ttg caa tta gcc gag cat gta gcc cag	1750
Gly Lys Thr Arg Asn Leu Phe Leu Gln Leu Ala Glu His Val Ala Gln	
368 373 378 383	
tct ctc act gtc act tca tgt tat gta tgt gga gga act gta ata gca	1798
Ser Leu Thr Val Thr Ser Cys Tyr Val Cys Gly Gly Thr Val Ile Ala	
384 389 394 399	
gat caa tgg cca tgg gaa gcc cga gaa tta gta cct aca gac cca gtt	1846
Asp Gln Trp Pro Trp Glu Ala Arg Glu Leu Val Pro Thr Asp Pro Val	
400 405 410 415	

cct gat gaa ttc cca gct caa aag aat cac	cct gat aat ttc tgg gtc	1894
Pro Asp Glu Phe Pro Ala Gln Lys Asn His	Pro Asp Asn Phe Trp Val	
416	426 431	
cta aaa gcc tca atc att aga caa tac tat	ata gca aga gtg gag aag	1942
Leu Lys Ala Ser Ile Ile Arg Gln Tyr Tyr	Ile Ala Arg Val Glu Lys	
432	442 447	
gac ttc acc ctt cct gta gga aga cta cat	ggg gga gtt caa acc aca	1990
Asp Phe Thr Leu Pro Val Gly Arg Leu His	Gly Gly Val Gln Thr Thr	
448	453 458 463	
cag aga aaa atc cat tca gta aat ttc caa	agt tgc aga ccg ttt agg	2038
Gln Arg Lys Ile His Ser Val Asn Phe Gln	Ser Cys Arg Pro Phe Arg	
464	469 474 479	
ccc acc cag aat ccc acc ggg act gga cag	ccc cca ctg ggc tat act	2086
Pro Thr Gln Asn Pro Thr Gly Thr Gly Gln	Pro Pro Leu Gly Tyr Thr	
480	485 490 495	
gga tat gtg gac ata gag cct aca cta agc	tgc ctg aca agt agt tgt	2134
Gly Tyr Val Asp Ile Glu Pro Thr Leu Ser	Cys Leu Thr Ser Ser Cys	
496	501 506 511	
gtt att ggc act att aaa cca tct ttc ttc	cta ctg tcc ata aaa aca	2182
Val Ile Gly Thr Ile Lys Pro Ser Phe Phe	Leu Leu Ser Ile Lys Thr	
512	517 522 527	
gga gaa ctc ctg ggc ttc cct gtc tat gct	tcc cgt gaa aag cat agc	2230
Gly Glu Leu Leu Gly Phe Pro Val Tyr Ala	Ser Arg Glu Lys His Ser	
528	533 538 543	
tat aag aaa ttg aaa caa tga ta aatggcccc	tgagagaatc atacagtatt	2283
Tyr Lys Lys Leu Lys Gln *		
544	549	
atgggcctgc tacttaggca caagatggct cgtggggata	ccggatcccc atttatatga	2343
tcaaccgaat catacggtta caagctgtct taaaaataat	cactgcaacc ggcagagcct	2403
tgactattct ggcccagcaa gaaactcaga tgagaaatgc	tatctatcaa aatagattag	2463
ctctcgacta cttgctagca gctgaaggag aggtctgtag	gaaatttaac cttactaatt	2523
gctgcctaca catagataac caagggcaag tagttgaaga	catagttaga gatatgacaa	2583
aagtggcaca tgtgccctg caagtgtggc atggatttga	tcctggggcc atgtttagaa	2643
aatggttccc agcgctagga ggatttaaaa ctcttataat	aagaggtata atagtaatag	2703
gaacctactt actgctccct cgtttgctac ctgtacttct	tcaaataataaaaagcttca	2763
tcgctacctt agtgtaccaa aatgcatcat cacaggtgta	ctatataaat cactattgat	2823
ctgtctagca cgaagacatg ggtagtaaac atgaaacaac	tcctgctatt gagtgagagt	2883
ctcaaagtgg gggaataagg gaggagacca cccctcatat	tgtcttatgc ccaatttctg	2943

cctccaaaga aagaaaaagt aaaaactaaa aggcagaaat gaaatccaca agcagacagc 3003  
 ccgggcgcca caccctggga ctggtagttg aaaatcaatc ccggacctaa tcggttatgt 3063  
 tatctataga ttacagacat tgtatagaaa agcattgtga aaatctcatt cctgttttgt 3123  
 tccaatctaa ttactggtgc gtgcagcccc cagtcacgta cccacgtacc tcctgcttgc 3183  
 tcaatcgatc acgacctct cagcacacc cccttagact tgtgagtcct taaaaggagc 3243  
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 ggcctaataa accccttcct tctttaaaaa aaaaaaaaaa a 3344

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (240) .. (575)

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 cgctggggag ctgtgagagt gtgaggggca cgttcacgcc gtctggactc tttctctcct 180  
 actgagacgc agcctatagg tccgcaggcc agtcctccca ggaactgaaa tagtgaaat 239  
 atg agt tgg cga gga aga tca aca tat agg cct agg cca aga aga agt 287  
 Met Ser Trp Arg Gly Arg Ser Thr Tyr Arg Pro Arg Pro Arg Arg Ser  
 1 5 10 15  
 tta cag cct cct gag ctg att ggg gct atg ctt gaa ccc act gat gaa 335  
 Leu Gln Pro Pro Glu Leu Ile Gly Ala Met Leu Glu Pro Thr Asp Glu  
 17 22 27 32  
 gag cct aaa gaa gag aaa cca ccc act aaa agt cgg aat cct aca cct 383  
 Glu Pro Lys Glu Glu Lys Pro Pro Thr Lys Ser Arg Asn Pro Thr Pro  
 33 38 43 48  
 gat cag aag aga gaa gat gat cag ggt gca gct gag att caa gtg cct 431  
 Asp Gln Lys Arg Glu Asp Asp Gln Gly Ala Ala Glu Ile Gln Val Pro  
 49 54 59 64  
 gac ctg gaa gcc gat ctc cag gag cta tgt cag aca aag act ggg gat 479  
 Asp Leu Glu Ala Asp Leu Gln Glu Leu Cys Gln Thr Lys Thr Gly Asp  
 65 70 75 80  
 gga tgt gaa ggt ggt act gat gtc aag ggg aag att cta cca aaa gca 527  
 Gly Cys Glu Gly Gly Thr Asp Val Lys Gly Lys Ile Leu Pro Lys Ala

81	86	91	96	
gag cac ttt aaa atg cca gaa gca ggt gaa ggg aaa tca cag gtt taa				575
Glu His Phe Lys Met Pro Glu Ala Gly Glu Gly Lys Ser Gln Val *				
97	102	107	112	

aggaagataa gctgaaacaa cacaaactgt ttttatatta gatattttac tttaaaatat	635
cttaataaaag ttttaagctt ttctccaaaa aaaaaaaaa	673

<210> 113  
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 <212> DNA  
 <213> Homo sapiens

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 <222> (733)..(909)

<220>  
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 <222> (1)...(987)  
 <223> n = a,t,c or g

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ggttctcttc ttgctcttgc ctgtgacctt ggctgggtgtg aggactggag ctgctgcctg	180
gtacagggtg gaggagatct tgttgatgta gtacagacca accatggaga agatgaagca	240
ggtaggtgaca cagactcggg ggatgaggcc agatgcaaag agagccaaca ggaggcacag	300
gagaatctca gggaagatct ttgcttgga tcttttgccc aagacaagat tttccaaatt	360
attgaaggca gtgagcgaga acacgaagag accctaacca agcaggccgc cttggatggt	420
gagccactcg gtggaggcca gctgacggct gtacatctgc atcccagcaa agagcagcag	480
ggacaggagg gaggagagcg ccagcgaggt gcccgtaacc accactggag gggatgggag	540
aagggaaggga gagtcaggct ccgccctccc tccggcaagc tacgggcaga tcagccggtc	600
cggaagctcg gtgggcccag cccctccaag aactcccggg actgcagcca cagccccaa	660
ctccccacac cgcgcggcaa cccctacgta tccccagcc ccggacaccc cgaaccctcc	720
cgtccggtgg aa atg ccc gct ccc ggt gga acc cag gac acg tca gct	768
	Met Pro Ala Pro Gly Gly Thr Gln Asp Thr Ser Ala
	1 5 10
ctg tcg gga gag gac gag gaa agc ttg tcc acc caa acc ccg acc ccc	816

Leu	Ser	Gly	Glu	Asp	Glu	Glu	Ser	Leu	Ser	Thr	Gln	Thr	Pro	Thr	Pro	
13					18					23					28	
tct	agg	act	tcc	tgg	gga	ccc	cac	cgg	tcc	tgt	tac	cca	tca	tgc	ccc	864
Ser	Arg	Thr	Ser	Trp	Gly	Pro	His	Arg	Ser	Cys	Tyr	Pro	Ser	Cys	Pro	
29					34				39					44		
gcc	cgt	gag	tcc	aac	cgg	cgc	ctc	tgg	cca	aga	aag	gcg	agc	tga	acc	912
Ala	Arg	Glu	Ser	Asn	Arg	Arg	Leu	Trp	Pro	Arg	Lys	Ala	Ser	*		
45					50				55							
gggtgcggtt	agctatgcgc	atgcgtcagc	gacgaaatcg	tcgacccggg	aattccggac											972
cgtaccta	ggcgt															987

<210> 114  
 <211> 1618  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> CDS  
 <222> (255)..(809)

<400> 114																
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tgtccccacc	cccagggtca	gagcaccac	aggtgccgag	ctggcccagg	agacccccac											180
gctgctgacg	ctgtttgcct	tgtgtctgca	caggcctcta	ctaaactctc	ccacacaatt											240
agtgtcttaa	atat	atg	tac	acg	tat	ata	ttt	tgt	ccc	aac	tgt	gtc	agt			290
		Met	Tyr	Thr	Tyr	Ile	Phe	Cys	Pro	Asn	Cys	Val	Ser			
		1				5						10				
tat	aaa	atg	aaa	act	gac	cac	ttc	tcc	tta	cgt	tat	ctt	cac	agt	agc	338
Tyr	Lys	Met	Lys	Thr	Asp	His	Phe	Ser	Leu	Arg	Tyr	Leu	His	Ser	Ser	
13					18					23				28		
tgt	gca	gaa	gac	aac	aaa	tcc	agt	ggt	gat	agc	tca	ggg	cag	gct	gcc	386
Cys	Ala	Glu	Asp	Asn	Lys	Ser	Ser	Val	Asp	Ser	Ser	Gly	Gln	Ala	Ala	
29					34					39				44		
cac	ccc	agc	aaa	ggg	aag	ttc	ttc	ccc	cat	ggg	acc	cac	tgg	ggg	acc	434
His	Pro	Ser	Lys	Gly	Lys	Phe	Phe	Pro	His	Gly	Thr	His	Trp	Gly	Thr	
45					50					55				60		
cag	tgc	cgc	ggc	cac	atc	tcc	gtg	ctt	ggg	tgg	cag	tgt	agc	tgc	cca	482
Gln	Cys	Arg	Gly	His	Ile	Ser	Val	Leu	Gly	Trp	Gln	Cys	Ser	Cys	Pro	
61					66					71				76		
tct	acg	ggg	tgc	cgg	gtt	ggc	ttg	ggc	ctt	gcc	atg	tgc	cag	acg	cat	530

Ser	Thr	Gly	Cys	Arg	Val	Gly	Leu	Gly	Leu	Ala	Met	Cys	Gln	Thr	His	
77					82					87					92	
gca	tac	ata	cac	aca	cac	aca	cac	aca	cac	aca	cac	acc	cca	ccc	gat	578
Ala	Tyr	Ile	His	Thr	His	Thr	His	Thr	His	Thr	His	Thr	Pro	Pro	Asp	
93					98					103					108	
tat	gga	gca	cat	cac	acc	gat	ccc	ttg	cag	agg	tgg	ggg	ctg	ggg	ccc	626
Tyr	Gly	Ala	His	His	Thr	Asp	Pro	Leu	Gln	Arg	Trp	Gly	Leu	Gly	Pro	
109					114					119					124	
agg	aca	atc	aga	agc	agg	gcc	cct	ccc	cca	gct	gtc	tcg	aga	cca	aag	674
Arg	Thr	Ile	Arg	Ser	Arg	Ala	Pro	Pro	Pro	Ala	Val	Ser	Arg	Pro	Lys	
125					130					135					140	
cca	tcc	agg	gcc	tct	gag	ccc	tgg	ggc	atc	acc	cag	aag	cgc	tgg	gct	722
Pro	Ser	Arg	Ala	Ser	Glu	Pro	Trp	Gly	Ile	Thr	Gln	Lys	Arg	Trp	Ala	
141					146					151					156	
ccc	agg	ctg	gca	ccc	agc	aca	cca	gga	gcc	cag	ggc	gcg	tgg	gag	atg	770
Pro	Arg	Leu	Ala	Pro	Ser	Thr	Pro	Gly	Ala	Gln	Gly	Ala	Trp	Glu	Met	
157					162					167					172	
cgc	cag	gga	cgg	tct	ttc	act	cca	gac	cag	gct	gac	taa	taa	aat	atg	819
Arg	Gln	Gly	Arg	Ser	Phe	Thr	Pro	Asp	Gln	Ala	Asp	*				
173					178					183						
atccagtgtt	gtcaggagat	gagaaaataa	cgtagacttg	gctggactct	gttgtcaagg											879
ccattcccag	tcacagagga	aacatcccag	gtggtctcca	ggcgtccagg	tggctctgca											939
cctgccgacc	cccagaggcc	agtgagggtc	tggcagcaag	atgtgctcca	ttaggcaggc											999
aaagcagggc	gacctgaacc	aacgacatgt	gtgggggttg	tggctctccac	attctattca											1059
tgttcgagga	gcgtcagtct	cccaaggctg	cggtatggagg	cccctagggt	gctgcgactc											1119
ccactcctca	cctgccccta	accctgccgc	catggccact	ttcaccatg	cctgcgcgtg											1179
gggaaaggaa	ggcccgcaaa	ccctgcccct	ggcggacagg	gcagcccttg	cctctgctca											1239
gtcagtgcac	ggaaatgccc	acagctccag	ggagaccccc	tagcaggcag	agtgaccgtc											1299
aaggtaaggc	ccacggtggc	ccagcagcag	cacacagctc	agcggcccag	acccaccct											1359
gggggatgcc	cagaggcttc	ctagacctgc	actcaggcag	acaagcatgt	ggctgggcgg											1419
ccaccagcag	acatctggcc	gcctcaggag	gctcttcttg	gctctaaaga	gaatccagtt											1479
ccaaattccc	actttctctg	ctcaaagtta	cagtgtggtc	ataattgcac	gctctcatgg											1539
accacgtcc	caccgagtg	acaatgatgc	cacagccact	cagcttctag	ctggctctac											1599
tccgaattcc	accagactg															1618

<210> 115  
 <211> 4258  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (50) .. (3259)

<400> 115  
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 Met Pro  
 1

act cag act gat gtc aag tta aaa ttc aag cca tta tct aaa aaa gtt 103  
 Thr Gln Thr Asp Val Lys Leu Lys Phe Lys Pro Leu Ser Lys Lys Val  
 3 8 13 18

gta tct gcc gct ctt cag ttt tca tta tct tgc att ttt ctg agg gaa 151  
 Val Ser Ala Ala Leu Gln Phe Ser Leu Ser Cys Ile Phe Leu Arg Glu  
 19 24 29 34

gga aaa gcc aca gat gaa gac atg caa agt ttg gct agt ttg atg agt 199  
 Gly Lys Ala Thr Asp Glu Asp Met Gln Ser Leu Ala Ser Leu Met Ser  
 35 40 45 50

atg aag cag gct gac att ggc aat tta gat gac ttc gaa gaa gat aat 247  
 Met Lys Gln Ala Asp Ile Gly Asn Leu Asp Asp Phe Glu Glu Asp Asn  
 51 56 61 66

gaa gat gat gat gag aac aga gtg aac caa gaa gaa aag gca gct aaa 295  
 Glu Asp Asp Asp Glu Asn Arg Val Asn Gln Glu Glu Lys Ala Ala Lys  
 67 72 77 82

att aca gag ctt atc aac aaa ctt aac ttt ttg gat gaa gca gaa aag 343  
 Ile Thr Glu Leu Ile Asn Lys Leu Asn Phe Leu Asp Glu Ala Glu Lys  
 83 88 93 98

gac ttg gcc acc gtg aat tca aat cca ttt gat gat cct gat gct gca 391  
 Asp Leu Ala Thr Val Asn Ser Asn Pro Phe Asp Asp Pro Asp Ala Ala  
 99 104 109 114

gaa tta aat cca ttt gga gat cct gac tca gaa gaa cct atc act gaa 439  
 Glu Leu Asn Pro Phe Gly Asp Pro Asp Ser Glu Glu Pro Ile Thr Glu  
 115 120 125 130

aca gct tca cct aga aaa aca gaa gac tct ttt tat aat aac agc tat 487  
 Thr Ala Ser Pro Arg Lys Thr Glu Asp Ser Phe Tyr Asn Asn Ser Tyr  
 131 136 141 146

aat ccc ttt aaa gag gtg cag act cca cag tat ttg aac cca ttc gat 535  
 Asn Pro Phe Lys Glu Val Gln Thr Pro Gln Tyr Leu Asn Pro Phe Asp  
 147 152 157 162

gag cca gaa gca ttt gtg acc ata aag gat tct cct ccc cag tct aca 583  
 Glu Pro Glu Ala Phe Val Thr Ile Lys Asp Ser Pro Pro Gln Ser Thr

163	168	173	178	
aaa aga aaa aat ata	aga cct gtg gat atg	agc aag tac ctc tat	gct	631
Lys Arg Lys Asn Ile	Arg Pro Val Asp Met	Ser Lys Tyr Leu Tyr	Ala	
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tat gaa cct aaa tca act	cct cct cct cca aat	aat ttg gta aat cct	gtt	727
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Pro Val Leu Ser Pro	Lys Thr Gly Val Leu	Asn Glu Asn Thr Val	Ser	
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Ala Gly Lys Asp Leu	Ser Thr Ser Pro Lys	Pro Ser Pro Ile Pro	Ser	
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Cys Lys Glu Val Thr	Lys Asn Tyr Arg Gly	Val Lys Ile Thr Asn	Phe	
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Thr Thr Ser Trp Arg	Asn Gly Leu Ser Phe	Cys Ala Ile Leu His	His	
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Phe Arg Pro Asp Leu	Ile Asp Tyr Lys Ser	Leu Asn Pro Gln Asp	Ile	
323	328	333	338	
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Gly Gln Glu Leu Asn	Val Val Gln Ile Glu	Glu Asn Ser Ser Lys	Ser	
387	392	397	402	



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Gly Arg Thr Ser Gly Ser Asp Asp Pro Gly Ile Cys Ser Asn Thr Asp	
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Ser Thr Gln Ala Gln Val Leu Leu Gly Lys Lys Arg Leu Leu Lys Ala	
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Glu Thr Leu Glu Leu Ser Asp Leu Tyr Val Ser Asp Lys Lys Lys Asp	
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Cys Lys Glu Val Thr Lys Asn Tyr Arg Gly Val Lys Ile Thr Asn Phe	
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Arg Asn Pro Val Val Phe Ser Lys Asp Ser Thr Val Arg Lys Thr Gln	
803 808 813 818	
ctt cag tct ttc agc caa tat att gag aat aga cca gag atg aaa agg	2551
Leu Gln Ser Phe Ser Gln Tyr Ile Glu Asn Arg Pro Glu Met Lys Arg	
819 824 829 834	
cag aga tca ata cag gaa gat aca aag aaa gga aat gag gag aag gca	2599
Gln Arg Ser Ile Gln Glu Asp Thr Lys Lys Gly Asn Glu Glu Lys Ala	
835 840 845 850	
gcg ata act gaa act cag agg aag cca tca gaa gat gaa gtg ctt aat	2647
Ala Ile Thr Glu Thr Gln Arg Lys Pro Ser Glu Asp Glu Val Leu Asn	
851 856 861 866	
aaa ggg ttc aaa gac acc agt cag tat gta gta gga gaa ttg gca gca	2695
Lys Gly Phe Lys Asp Thr Ser Gln Tyr Val Val Gly Glu Leu Ala Ala	
867 872 877 882	
cta gag aat gag caa aag caa att gac acc cgt gcc gcg ctg gtg gag	2743
Leu Glu Asn Glu Gln Lys Gln Ile Asp Thr Arg Ala Ala Leu Val Glu	
883 888 893 898	
aag cgc ctt cgc tat ctc atg gac aca gga agg aac aca gaa gaa gaa	2791
Lys Arg Leu Arg Tyr Leu Met Asp Thr Gly Arg Asn Thr Glu Glu Glu	
899 904 909 914	
gaa gct atg atg cag gaa tgg ttt atg tta gtt aat aag aaa aat gcc	2839
Glu Ala Met Met Gln Glu Trp Phe Met Leu Val Asn Lys Lys Asn Ala	
915 920 925 930	
tta ata agg aga atg aat cag ctc tct ctt ctg gaa aaa gaa cat gat	2887
Leu Ile Arg Arg Met Asn Gln Leu Ser Leu Leu Glu Lys Glu His Asp	
931 936 941 946	



tta gaa cga cgg tat	gag ctg ctg aac cgg	gaa ttg agg gca atg cta	2935
Leu Glu Arg Arg Tyr	Glu Leu Leu Asn Arg	Glu Leu Arg Ala Met Leu	
947	952	957 962	
gcc att gaa gac tgg	cag aag acc gag gcc	cag aag cga cgc gaa cag	2983
Ala Ile Glu Asp Trp	Gln Lys Thr Glu Ala	Gln Lys Arg Arg Glu Gln	
963	968	973 978	
ctt ctg cta gat gag	ctg gtg gcc ctg gtg	aac aag cgc gat gcg ctc	3031
Leu Leu Leu Asp Glu	Leu Val Ala Leu Val	Asn Lys Arg Asp Ala Leu	
979	984	989 994	
gtc agg gac ctg gac	gcg cag gag aag cag	gcc gaa gaa gaa gat gag	3079
Val Arg Asp Leu Asp	Ala Gln Glu Lys Gln	Ala Glu Glu Glu Asp Glu	
995	1000	1005 1010	
cat ttg gag cga act	ctg gag caa aac aaa	ggc aag atg gcc aag aaa	3127
His Leu Glu Arg Thr	Leu Glu Gln Asn Lys	Gly Lys Met Ala Lys Lys	
1011	1016	1021 1026	
gag gag aaa tgt gtt	ctt cag tag ccatcagatc	agaaagaatc tctcccaaca	3181
Glu Glu Lys Cys Val	Leu Gln *		
1027	1032		
tttttagagtc	ttgcttccca aaccagaaaa	agtcagactc attggttgatt	taaaactttt 3241
aacatttttgt	ttggctggat tgtactactt	tacctctact ttaccaccac	cacctttttc 3301
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taatatttat	tctgtattga taaaaagtct	gtcttgccac tacaagtaaa	tccccattt 4021
aatattttct	tctttagcat agcactgtca	ttttttgtga aaatggttat	gtttatttat 4081
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aaaaaaaaa			4150

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Arg Arg Thr Ala Leu Ile Leu Gly Ser Gly Leu Leu Ser Phe Val Ala		
2 7 12 17		
ttc tgg aac tca gtg aca tgg cat ctt cag aga ttt tgg ggt gct tct		152
Phe Trp Asn Ser Val Thr Trp His Leu Gln Arg Phe Trp Gly Ala Ser		
18 23 28 33		
ggc tac ttt tgg caa gcc cag tgg gag agg ctg ctg act aca ttt gaa		200
Gly Tyr Phe Trp Gln Ala Gln Trp Glu Arg Leu Leu Thr Thr Phe Glu		
34 39 44 49		
ggg aag gag tgg atc ctc ttc ttt ata ggt gcc atc caa gtg cct tgt		248
Gly Lys Glu Trp Ile Leu Phe Phe Ile Gly Ala Ile Gln Val Pro Cys		
50 55 60 65		
ctc ttc ttc tgg agc ttc aat ggg ctt cta ttg gtg gtt gac aca aca		296
Leu Phe Phe Trp Ser Phe Asn Gly Leu Leu Leu Val Val Asp Thr Thr		
66 71 76 81		
gga aaa cct aac ttc atc tct cgc tac cga att cag gtc ggc aag aat		344
Gly Lys Pro Asn Phe Ile Ser Arg Tyr Arg Ile Gln Val Gly Lys Asn		
82 87 92 97		
gaa cct gtg gat cct gtg aaa ctg cac cag tgc atg ata tct ttc ccc		392
Glu Pro Val Asp Pro Val Lys Leu His Gln Cys Met Ile Ser Phe Pro		
98 103 108 113		
atg gtg gtc ttc ctc tat ccc ttc ctc aaa tgg tgg aga gac ccc tgc		440
Met Val Val Phe Leu Tyr Pro Phe Leu Lys Trp Trp Arg Asp Pro Cys		
114 119 124 129		
cgc cgt gag cta ccc acc ttc cac tgg ttc ctc ctg gag ctg gcc atc		488
Arg Arg Glu Leu Pro Thr Phe His Trp Phe Leu Leu Glu Leu Ala Ile		
130 135 140 145		
ttc acg ctg atc gag gaa gtc ttg ttc tac tat tca cac cgg ctc ctt		536
Phe Thr Leu Ile Glu Glu Val Leu Phe Tyr Tyr Ser His Arg Leu Leu		
146 151 156 161		

cac cac cca aca ttc tac aag aaa atc cac aag aaa cac cat gag tgg	584
His His Pro Thr Phe Tyr Lys Lys Ile His Lys Lys His His Glu Trp	
162 167 172 177	
aca gct ccc att ggc gtg atc tct ctc tat gcc cac cct ata gag cat	632
Thr Ala Pro Ile Gly Val Ile Ser Leu Tyr Ala His Pro Ile Glu His	
178 183 188 193	
gca gtc tcc aac atg cta ccg gtg ata gtg ggc cca tta gta atg ggc	680
Ala Val Ser Asn Met Leu Pro Val Ile Val Gly Pro Leu Val Met Gly	
194 199 204 209	
tcc cac ttg tcc tcc atc acc atg tgg ttt tcc ttg gcc ctc atc atc	728
Ser His Leu Ser Ser Ile Thr Met Trp Phe Ser Leu Ala Leu Ile Ile	
210 215 220 225	
acc acc atc tcc cac tgt ggc tac cac ctt ccc ttc ctg cct tcg cct	776
Thr Thr Ile Ser His Cys Gly Tyr His Leu Pro Phe Leu Pro Ser Pro	
226 231 236 241	
gaa ttc cac gac tac cac cat ctc aag ttc aac cag tgc tat ggg gtg	824
Glu Phe His Asp Tyr His His Leu Lys Phe Asn Gln Cys Tyr Gly Val	
242 247 252 257	
ctg ggt gtg ctg gac cac ctc cat ggg act gac acc atg ttc aag cag	872
Leu Gly Val Leu Asp His Leu His Gly Thr Asp Thr Met Phe Lys Gln	
258 263 268 273	
acc aag gcc tac gag aga cat gtc ctc ctg ctg ggc ttc acc ccg ctc	920
Thr Lys Ala Tyr Glu Arg His Val Leu Leu Leu Gly Phe Thr Pro Leu	
274 279 284 289	
tct gag agc atc cca gac tcc cca aag agg atg gag tga gagacagcct	969
Ser Glu Ser Ile Pro Asp Ser Pro Lys Arg Met Glu *	
290 295 300	
aagtgtcatc ctggctgtcc ctcagccatg ggatgcagac acggcttcct gattgcacct	1029
aacaatttgc ctccttcggc cacacgcct aatgatggca ccaccagggt agaggggaagg	1089
tcggcttccc ggaaaagcag ggccaaggat gaggctttct tcaaactact gcccttgatg	1149
tccctcaatg ggatcaggag ttagcttaag aaaaaggaaa acacagctcc ccagactgga	1209
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agataactcc tttgtggcct gggcaggatg cagagaatga caaggctgaa aggaggggga	1329
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<213> Homo sapiens

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aaggcgccgg gacccggagg aaccggaaaa aacagaactc agcgaaagag agctggcagt 180

agcagtggcg gtgtcccagg agaacgatga ggagaacgaa gagcgctggg ttggaccttt 240

acctgtggag gcaacactgg ccaagaagag gaaagtctta gagtttgaaa gagtctatct 300

tgataatctc cccagtgcac cc atg tat gag cgc agt tac atg cat aga gat 352

Met Tyr Glu Arg Ser Tyr Met His Arg Asp

1 5

gtt atc acc cat gtg gta tgc acc aaa aca gat ttt att att act gcc 400

Val Ile Thr His Val Val Cys Thr Lys Thr Asp Phe Ile Ile Thr Ala

11 16 21 26

agt cat gat gga cat gtc aag ttc tgg aaa aaa ata gaa gag gga att 448

Ser His Asp Gly His Val Lys Phe Trp Lys Lys Ile Glu Glu Gly Ile

27 32 37 42

gaa ttt gtt aaa cat ttt cgt agt cac ctg gga gtt att gag agt att 496

Glu Phe Val Lys His Phe Arg Ser His Leu Gly Val Ile Glu Ser Ile

43 48 53 58

gca gtt agc tct gag gga gca ttg ttc tgt tct gtg ggt gat gat aaa 544

Ala Val Ser Ser Glu Gly Ala Leu Phe Cys Ser Val Gly Asp Asp Lys

59 64 69 74

gca atg aag gtg ttt gat gta gtg aac ttt gac atg atc aac atg ctg 592

Ala Met Lys Val Phe Asp Val Val Asn Phe Asp Met Ile Asn Met Leu

75 80 85 90

aaa ctt ggc tat ttt cct gga cag tgt gag tgg atc tat tgc cca ggg 640

Lys Leu Gly Tyr Phe Pro Gly Gln Cys Glu Trp Ile Tyr Cys Pro Gly

91 96 101 106

gat gca att tct tca gtt gct gct tcc gaa aag agt aca gga aaa att 688

Asp Ala Ile Ser Ser Val Ala Ala Ser Glu Lys Ser Thr Gly Lys Ile

107 112 117 122

ttc att tat gat ggc cga gga gat aac cag cca ctt cat att ttt gac 736

Phe Ile Tyr Asp Gly Arg Gly Asp Asn Gln Pro Leu His Ile Phe Asp

123 128 133 138

aaa ctc cat aca tca cct ctt act cag ata cgg cta aac cca gtt tac 784

Lys Leu His Thr Ser Pro Leu Thr Gln Ile Arg Leu Asn Pro Val Tyr

139 144 149 154

aaa gca gta gtg tct tct gac aaa tct ggg atg att gaa tac tgg act	832
Lys Ala Val Val Ser Ser Asp Lys Ser Gly Met Ile Glu Tyr Trp Thr	
155 160 165 170	
ggg cct cct cat gaa tat aaa ttc ccc aaa aat gtg aac tgg gaa tat	880
Gly Pro Pro His Glu Tyr Lys Phe Pro Lys Asn Val Asn Trp Glu Tyr	
171 176 181 186	
aaa act gac act gat tta tat gaa ttt gcc aag tgt aag gct tat cca	928
Lys Thr Asp Thr Asp Leu Tyr Glu Phe Ala Lys Cys Lys Ala Tyr Pro	
187 192 197 202	
acc agc gta tgt ttt tca cca gat ggg aag aaa ata gct act att ggt	976
Thr Ser Val Cys Phe Ser Pro Asp Gly Lys Lys Ile Ala Thr Ile Gly	
203 208 213 218	
tct gat aga aaa gtt aga att ttc aga ttt gta act gga aaa ctc atg	1024
Ser Asp Arg Lys Val Arg Ile Phe Arg Phe Val Thr Gly Lys Leu Met	
219 224 229 234	
aga gtc ttt gat gaa tca cta agc atg ttt act gaa ctg caa cag atg	1072
Arg Val Phe Asp Glu Ser Leu Ser Met Phe Thr Glu Leu Gln Gln Met	
235 240 245 250	
agg caa cag tta cca gac atg gaa ttt ggc cga cga atg gct gta gaa	1120
Arg Gln Gln Leu Pro Asp Met Glu Phe Gly Arg Arg Met Ala Val Glu	
251 256 261 266	
cgt gag ttg gag aag gtt gat gct gta aga tta att aat ata gtt ttt	1168
Arg Glu Leu Glu Lys Val Asp Ala Val Arg Leu Ile Asn Ile Val Phe	
267 272 277 282	
gat gaa act gga cac ttc gtg ctg tat gga aca atg ctg ggc att aaa	1216
Asp Glu Thr Gly His Phe Val Leu Tyr Gly Thr Met Leu Gly Ile Lys	
283 288 293 298	
gtt ata aat gta gag aca aac cgg tgt gtg cgg att tta ggc aaa caa	1264
Val Ile Asn Val Glu Thr Asn Arg Cys Val Arg Ile Leu Gly Lys Gln	
299 304 309 314	
gaa aat att aga gtg atg caa ttg gct ttg ttc cag ggg ata gcc aaa	1312
Glu Asn Ile Arg Val Met Gln Leu Ala Leu Phe Gln Gly Ile Ala Lys	
315 320 325 330	
aag cat cgt gct gca act act ata gaa atg aaa gct tct gaa aat cct	1360
Lys His Arg Ala Ala Thr Thr Ile Glu Met Lys Ala Ser Glu Asn Pro	
331 336 341 346	
gtt ctt cag aat att caa gct gac cca aca ata gtc tgt aca tca ttc	1408
Val Leu Gln Asn Ile Gln Ala Asp Pro Thr Ile Val Cys Thr Ser Phe	
347 352 357 362	
aaa aag aat aga ttt tat atg ttt acc aaa cga gaa cca gaa gat acg	1456
Lys Lys Asn Arg Phe Tyr Met Phe Thr Lys Arg Glu Pro Glu Asp Thr	
363 368 373 378	
aaa agt gca gat tct gat cga gat gtt ttt aat gag aaa cct tct aaa	1504

Lys Ser Ala Asp Ser Asp Arg Asp Val Phe Asn Glu Lys Pro Ser Lys	
379 384 389 394	
gaa gaa gtc atg gca gct act caa gct gaa gga cct aaa cga gtt tcg	1552
Glu Glu Val Met Ala Ala Thr Gln Ala Glu Gly Pro Lys Arg Val Ser	
395 400 405 410	
gac agt gcc att atc cac acc agc atg gga gac att cac acc aaa ctt	1600
Asp Ser Ala Ile Ile His Thr Ser Met Gly Asp Ile His Thr Lys Leu	
411 416 421 426	
ttt cct gtt gag tgc cct aag aca gtg gaa aac ttc tgt gtt cac agc	1648
Phe Pro Val Glu Cys Pro Lys Thr Val Glu Asn Phe Cys Val His Ser	
427 432 437 442	
aga aat ggt tat tat aat ggg cat aca ttt cac cgt ata att aag ggc	1696
Arg Asn Gly Tyr Tyr Asn Gly His Thr Phe His Arg Ile Ile Lys Gly	
443 448 453 458	
ttt atg att cag act gga gat cca aca ggt act ggt atg gga gga gaa	1744
Phe Met Ile Gln Thr Gly Asp Pro Thr Gly Thr Gly Met Gly Gly Glu	
459 464 469 474	
agc ata tgg gga gga gaa ttt gaa gat gaa ttt cat tca aca tta cga	1792
Ser Ile Trp Gly Gly Glu Phe Glu Asp Glu Phe His Ser Thr Leu Arg	
475 480 485 490	
cat gac agg cca tac aca ctc agc atg gct aac gcg gga tca aat act	1840
His Asp Arg Pro Tyr Thr Leu Ser Met Ala Asn Ala Gly Ser Asn Thr	
491 496 501 506	
aat gga tcc cag ttt ttc ata acg gta gta cca acg cct tgg ctt gat	1888
Asn Gly Ser Gln Phe Phe Ile Thr Val Val Pro Thr Pro Trp Leu Asp	
507 512 517 522	
aat aag cat aca gta ttt gga cga gtg act aaa gga atg gaa gtt gta	1936
Asn Lys His Thr Val Phe Gly Arg Val Thr Lys Gly Met Glu Val Val	
523 528 533 538	
cag agg atc tcc aac gtc aaa gtc aat ccc aaa aca gat aag ccc tat	1984
Gln Arg Ile Ser Asn Val Lys Val Asn Pro Lys Thr Asp Lys Pro Tyr	
539 544 549 554	
gag gat gtc agc atc ata aat att act gtc aag taa aata agatttgatt	2034
Glu Asp Val Ser Ile Ile Asn Ile Thr Val Lys *	
555 560 565	
taatgtactt gcaaataaaa atacaatatt aaacagatta ttttacatta ggaagcttag	2094
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 Met Ala Ala Ser Arg Lys Pro Pro Arg Val Arg Val  
 1 5 10

aat cac cag gat ttt caa ctg aga aat tta aga ata att gaa cct aac 159  
 Asn His Gln Asp Phe Gln Leu Arg Asn Leu Arg Ile Ile Glu Pro Asn  
 13 18 23 28

gag gtg aca cac tca gga gac aca ggt gtg gaa aca gac ggc aga atg 207  
 Glu Val Thr His Ser Gly Asp Thr Gly Val Glu Thr Asp Gly Arg Met  
 29 34 39 44

cct cca aag gtg act tca gag ctg ctt cgg cag ctg aga caa gcc atg 255  
 Pro Pro Lys Val Thr Ser Glu Leu Leu Arg Gln Leu Arg Gln Ala Met  
 45 50 55 60

agg aac tct gag tat gtg acc gaa ccg atc cag gcc tac atc atc cca 303  
 Arg Asn Ser Glu Tyr Val Thr Glu Pro Ile Gln Ala Tyr Ile Ile Pro  
 61 66 71 76

tgc gga gat gct cat cag agt gag tat att gct cca tgt gac tgt cgg 351  
 Ser Gly Asp Ala His Gln Ser Glu Tyr Ile Ala Pro Cys Asp Cys Arg  
 77 82 87 92

cgg gct ttt gtc tct gga ttc gat ggc tct gcg ggc aca gcc atc atc 399  
 Arg Ala Phe Val Ser Gly Phe Asp Gly Ser Ala Gly Thr Ala Ile Ile  
 93 98 103 108

aca gaa gag cat gca gcc atg tgg act gac ggg cgc tac ttt ctc cag 447  
 Thr Glu Glu His Ala Ala Met Trp Thr Asp Gly Arg Tyr Phe Leu Gln  
 109 114 119 124

gct gcc aag caa atg gac agc aac tgg aca ctt atg aag atg ggt ctg 495  
 Ala Ala Lys Gln Met Asp Ser Asn Trp Thr Leu Met Lys Met Gly Leu  
 125 130 135 140

aag gac aca cca act cag gaa gac tgg ctg gtg agt gtg ctt cct gaa 543  
 Lys Asp Thr Pro Thr Gln Glu Asp Trp Leu Val Ser Val Leu Pro Glu  
 141 146 151 156

gga tcc agg gtt ggt gtg gac ccc ttg atc att cct aca gat tat tgg 591

Gly Ser Arg Val Gly Val Asp Pro Leu Ile Ile Pro Thr Asp Tyr Trp	
157 162 167 172	
aag aaa atg gcc aaa gtt ctg aga agt gcc ggc cat cac ctc att cct	639
Lys Lys Met Ala Lys Val Leu Arg Ser Ala Gly His His Leu Ile Pro	
173 178 183 188	
gtc aag gag aac ctc gtt gac aaa atc tgg aca gac cgt cct gag cgc	687
Val Lys Glu Asn Leu Val Asp Lys Ile Trp Thr Asp Arg Pro Glu Arg	
189 194 199 204	
cct tgc aag cct ctc ctc aca ctg ggc ctg gat tac aca ggc atc tcc	735
Pro Cys Lys Pro Leu Leu Thr Leu Gly Leu Asp Tyr Thr Gly Ile Ser	
205 210 215 220	
tgg aag gac aag gtt gca gac ctt cgg ttg aaa atg gct gag agg aac	783
Trp Lys Asp Lys Val Ala Asp Leu Arg Leu Lys Met Ala Glu Arg Asn	
221 226 231 236	
gtc atg tgg ttt gtg gtc act gcc ttg gat gag att gcg tgg cta ttt	831
Val Met Trp Phe Val Val Thr Ala Leu Asp Glu Ile Ala Trp Leu Phe	
237 242 247 252	
aat ctc cga gga tca gat gtg gag cac aat cca gta ttt ttc tcc tac	879
Asn Leu Arg Gly Ser Asp Val Glu His Asn Pro Val Phe Phe Ser Tyr	
253 258 263 268	
gca atc ata gga cta gag acg atc atg ctc ttc att gat ggt gac cgc	927
Ala Ile Ile Gly Leu Glu Thr Ile Met Leu Phe Ile Asp Gly Asp Arg	
269 274 279 284	
ata gac gcc ccc agt gtg aag gag cac ctg ctt ctt gac ttg ggt ctg	975
Ile Asp Ala Pro Ser Val Lys Glu His Leu Leu Leu Asp Leu Gly Leu	
285 290 295 300	
gaa gcc gaa tac agg atc cag gtg cat ccc tac aag tcc atc ctg agc	1023
Glu Ala Glu Tyr Arg Ile Gln Val His Pro Tyr Lys Ser Ile Leu Ser	
301 306 311 316	
gag ctc aag gcc ctg tgt gct gac ctc tcc cca agg gag aag gtg tgg	1071
Glu Leu Lys Ala Leu Cys Ala Asp Leu Ser Pro Arg Glu Lys Val Trp	
317 322 327 332	
gtc agt gac aag gcc agc tat gct gtg agc gag acc atc ccc aag gac	1119
Val Ser Asp Lys Ala Ser Tyr Ala Val Ser Glu Thr Ile Pro Lys Asp	
333 338 343 348	
cac cgc tgc tgt atg cct tac acc ccc atc tgc atc gcc aaa gct gtg	1167
His Arg Cys Cys Met Pro Tyr Thr Pro Ile Cys Ile Ala Lys Ala Val	
349 354 359 364	
aag aat tca gct gag tca gaa ggc atg agg cgg gct cac att aaa gat	1215
Lys Asn Ser Ala Glu Ser Glu Gly Met Arg Arg Ala His Ile Lys Asp	
365 370 375 380	
gct gtt gct ctc tgt gaa ctc ttt aac tgg ctg gag aaa gag gtt ccc	1263
Ala Val Ala Leu Cys Glu Leu Phe Asn Trp Leu Glu Lys Glu Val Pro	



381	386	391	396	
aaa ggt ggt gtg aca	gag atc tca gct gct	gac aaa gct gag gag ttt	1311	
Lys Gly Gly Val Thr	Glu Ile Ser Ala Ala	Asp Lys Ala Glu Glu Phe		
397	402	407	412	
cgc agg caa cag gca	gac ttt gtg gac ctg	agc ttc cca aca att tcc	1359	
Arg Arg Gln Gln Ala	Asp Phe Val Asp Leu	Ser Phe Pro Thr Ile Ser		
413	418	423	428	
agt acg gga ccc aac	ggc gcc atc att cac	tac gcg cca gtc cct gag	1407	
Ser Thr Gly Pro Asn	Gly Ala Ile Ile His	Tyr Ala Pro Val Pro Glu		
429	434	439	444	
acg aat agg acc ttg	tcc ctg gat gag gtg	tac ctt att gac tcg ggt	1455	
Thr Asn Arg Thr Leu	Ser Leu Asp Glu Val	Tyr Leu Ile Asp Ser Gly		
445	450	455	460	
gct caa tac aag gat	ggc acc aca gat gtg	acg cgg aca atg cat ttt	1503	
Ala Gln Tyr Lys Asp	Gly Thr Thr Asp Val	Thr Arg Thr Met His Phe		
461	466	471	476	
ggg acc cct aca gcc	tac gag aag gaa tgc	ttc aca tat gtc ctc aag	1551	
Gly Thr Pro Thr Ala	Tyr Glu Lys Glu Cys	Phe Thr Tyr Val Leu Lys		
477	482	487	492	
ggc cac ata gct gtg	agt gca gcc gtt ttc	ccg act gga acc aaa ggt	1599	
Gly His Ile Ala Val	Ser Ala Ala Val Phe	Pro Thr Gly Thr Lys Gly		
493	498	503	508	
cac ctt ctt gac tcc	ttt gcc cgt tca gct	tta tgg gat tca ggc cta	1647	
His Leu Leu Asp Ser	Phe Ala Arg Ser Ala	Leu Trp Asp Ser Gly Leu		
509	514	519	524	
gat tac ttg cac ggg	act gga cat ggt gtt	ggg tct ttt ttg aat gtc	1695	
Asp Tyr Leu His Gly	Thr Gly His Gly Val	Gly Ser Phe Leu Asn Val		
525	530	535	540	
cat gag ggt cct tgc	ggc atc agt tac aaa	aca ttc tct gat gag ccc	1743	
His Glu Gly Pro Cys	Gly Ile Ser Tyr Lys	Thr Phe Ser Asp Glu Pro		
541	546	551	556	
ttg gag gca ggc atg	att gtc act gat gag	ccc ggg tac tat gaa gat	1791	
Leu Glu Ala Gly Met	Ile Val Thr Asp Glu	Pro Gly Tyr Tyr Glu Asp		
557	562	567	572	
ggg gct ttt gga att	cgc att gag aat gtt	gtc ctt gtg gtt cct gtg	1839	
Gly Ala Phe Gly Ile	Arg Ile Glu Asn Val	Val Leu Val Val Pro Val		
573	578	583	588	
aag acc aag tat aat	ttt aat aac cgg gga	agc ctg acc ttt gaa cct	1887	
Lys Thr Lys Tyr Asn	Phe Asn Asn Arg Gly	Ser Leu Thr Phe Glu Pro		
589	594	599	604	
cta aca ttg gtt cca	att cag acc aaa atg	ata gat gtg gat tct ctt	1935	
Leu Thr Leu Val Pro	Ile Gln Thr Lys Met	Ile Asp Val Asp Ser Leu		
605	610	615	620	

aca gac aaa gag tgc gac tgg ctc aac aat tac cac ctg acc tgc agg 1983  
 Thr Asp Lys Glu Cys Asp Trp Leu Asn Asn Tyr His Leu Thr Cys Arg  
 621 626 631 636

gat gtg att ggg aag gaa ttg cag aaa cag ggc cgc cag gaa gct ctc 2031  
 Asp Val Ile Gly Lys Glu Leu Gln Lys Gln Gly Arg Gln Glu Ala Leu  
 637 642 647 652

gag tgg ctc atc aga gag acg caa ccc atc tcc aaa cag cat taa taa 2079  
 Glu Trp Leu Ile Arg Glu Thr Gln Pro Ile Ser Lys Gln His \*  
 653 658 663

atacctcccc gggttttgttt ttgtaaaatg ctctggagga aggaagaaac gtggcagatc 2139

cctgacatct ttcccccttc ctttccttct tccctacctc cccctttttac tttagacttt 2199

aaggaaggac agaaantctt cttatcctct ttganatttt attgcaaaca ttcagtcttt 2259

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 tgtctttaag agtgattgaa gagaataatt caaa atg cct gaa aat cct gct 172  
 Met Pro Glu Asn Pro Ala  
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aca gat aaa ctg cag gtg ctg cag gta ctt gat cgc ctg aaa atg aaa 220  
 Thr Asp Lys Leu Gln Val Leu Gln Val Leu Asp Arg Leu Lys Met Lys  
 7 12 17 22

ttg cag gag aag ggt gac acg tcg cag aat gag aag tta tct atg ttt 268  
 Leu Gln Glu Lys Gly Asp Thr Ser Gln Asn Glu Lys Leu Ser Met Phe  
 23 28 33 38

tat gag aca cta aag agt cct ctc ttc aac cag ata ctc aca ctt cag 316  
 Tyr Glu Thr Leu Lys Ser Pro Leu Phe Asn Gln Ile Leu Thr Leu Gln  
 39 44 49 54

cag tcc atc aag caa ctg aag ggt caa ctc aac cat ata ccc tca gat 364  
 Gln Ser Ile Lys Gln Leu Lys Gly Gln Leu Asn His Ile Pro Ser Asp  
 55 60 65 70

tgt tca gcc aac ttt gat ttt tct agg aaa ggt ttg tta gtg ttc aca Cys Ser Ala Asn Phe Asp Phe Ser Arg Lys Gly Leu Leu Val Phe Thr 71 76 81 86	412
gat ggt tcc att act aat gga aat gtc cac agg ccc tct aat aac tcg Asp Gly Ser Ile Thr Asn Gly Asn Val His Arg Pro Ser Asn Asn Ser 87 92 97 102	460
act gta tct ggg tta ttt ccg tgg acc ccg aag ttg gga aat gaa gac Thr Val Ser Gly Leu Phe Pro Trp Thr Pro Lys Leu Gly Asn Glu Asp 103 108 113 118	508
ttt aac tca gtc att caa cag atg gct cag ggc cgg caa att gaa tat Phe Asn Ser Val Ile Gln Gln Met Ala Gln Gly Arg Gln Ile Glu Tyr 119 124 129 134	556
ata gat ata gaa cgg cct tca act gga ggc ctt gga ttc agt gtg gtg Ile Asp Ile Glu Arg Pro Ser Thr Gly Gly Leu Gly Phe Ser Val Val 135 140 145 150	604
gcc ctc aga agt caa aat ctc gga aaa gtt gat atc ttc gtg aag gat Ala Leu Arg Ser Gln Asn Leu Gly Lys Val Asp Ile Phe Val Lys Asp 151 156 161 166	652
gtc cag cca ggg agt gta gca gac agg gat caa aga tta aag gaa aat Val Gln Pro Gly Ser Val Ala Asp Arg Asp Gln Arg Leu Lys Glu Asn 167 172 177 182	700
gat caa ata ttg gcc att aat cac acg cca ttg gat cag aac att tcc Asp Gln Ile Leu Ala Ile Asn His Thr Pro Leu Asp Gln Asn Ile Ser 183 188 193 198	748
cat cag caa gca att gca tta tta caa caa acc act gga tct ttg aga His Gln Gln Ala Ile Ala Leu Leu Gln Gln Thr Thr Gly Ser Leu Arg 199 204 209 214	796
ctg att gtg gcc agg gaa cca gtc cac aca aaa agc agt act tct agc Leu Ile Val Ala Arg Glu Pro Val His Thr Lys Ser Ser Thr Ser Ser 215 220 225 230	844
agc cta aat gat aca act ctg cct gaa aca gtt tgt tgg ggc cat gtt Ser Leu Asn Asp Thr Thr Leu Pro Glu Thr Val Cys Trp Gly His Val 231 236 241 246	892
gaa gag gtt gag ctc att aat gat ggc tct gga cta ggt ttt gga ata Glu Glu Val Glu Leu Ile Asn Asp Gly Ser Gly Leu Gly Phe Gly Ile 247 252 257 262	940
gtt gga gga aaa aca agt ggc gtg gtt gtg agg act ata gtt cct gga Val Gly Gly Lys Thr Ser Gly Val Val Val Arg Thr Ile Val Pro Gly 263 268 273 278	988
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Lys Ile Gly Gly Thr Asn Val Gln Gly Met Thr Ser Glu Gln Val Ala	
295 300 305 310	
caa gtt cta agg aac tgt ggg aat tca gtc agg atg ctc gtt gct aga	1132
Gln Val Leu Arg Asn Cys Gly Asn Ser Val Arg Met Leu Val Ala Arg	
311 316 321 326	
gat cca gct ggt gac att tca gtc acc ccc cct gcc cct gca gcc tta	1180
Asp Pro Ala Gly Asp Ile Ser Val Thr Pro Pro Ala Pro Ala Ala Leu	
327 332 337 342	
cct gtt gcc ctg cct act gta gcc agc aag ggc cct ggt tct gac agt	1228
Pro Val Ala Leu Pro Thr Val Ala Ser Lys Gly Pro Gly Ser Asp Ser	
343 348 353 358	
tct ctt ttt gaa act tat aat gtt gag ctt gtg aga aaa gat ggg cag	1276
Ser Leu Phe Glu Thr Tyr Asn Val Glu Leu Val Arg Lys Asp Gly Gln	
359 364 369 374	
agt ctt gga att aga att gtt ggc tat gtt gga aca tct cat aca ggg	1324
Ser Leu Gly Ile Arg Ile Val Gly Tyr Val Gly Thr Ser His Thr Gly	
375 380 385 390	
gaa gct tca ggg att tat gtg aaa agt ata ata cct ggc agt gct gcg	1372
Glu Ala Ser Gly Ile Tyr Val Lys Ser Ile Ile Pro Gly Ser Ala Ala	
391 396 401 406	
tac cac aat ggc cac att caa gtg aat gac aaa ata gtt gct gtc gat	1420
Tyr His Asn Gly His Ile Gln Val Asn Asp Lys Ile Val Ala Val Asp	
407 412 417 422	
ggc gtg aac att cag ggt ttt gcc aac cat gat gtt gtt gaa gta tta	1468
Gly Val Asn Ile Gln Gly Phe Ala Asn His Asp Val Val Glu Val Leu	
423 428 433 438	
cga aat gca ggg cag gtg gta cac cta acc cta gtt cga agg aag aca	1516
Arg Asn Ala Gly Gln Val Val His Leu Thr Leu Val Arg Arg Lys Thr	
439 444 449 454	
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Ser Ser Ser Thr Ser Pro Leu Glu Pro Pro Ser Asp Arg Gly Thr Val	
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Val Glu Pro Leu Lys Pro Pro Ala Leu Phe Leu Thr Gly Ala Val Glu	
471 476 481 486	
act gaa act aat gtg gat ggt gaa gat gag gaa att aaa gaa aga att	1660
Thr Glu Thr Asn Val Asp Gly Glu Asp Glu Glu Ile Lys Glu Arg Ile	
487 492 497 502	
gat act tta aaa aat gac aac ata caa gcc tta gaa aaa ttg gaa aaa	1708
Asp Thr Leu Lys Asn Asp Asn Ile Gln Ala Leu Glu Lys Leu Glu Lys	
503 508 513 518	
gtc cca gac tct cca gaa aat gag ctg aaa tcc aga tgg gaa aac ctg	1756

Val Pro Asp Ser Pro	Glu Asn Glu Leu Lys	Ser Arg Trp Glu Asn Leu	
519	524	529	534
ttg ggt cct gat tat	gaa gta atg gtt gct	act ttg gac aca cag att	1804
Leu Gly Pro Asp Tyr	Glu Val Met Val Ala	Thr Leu Asp Thr Gln Ile	
535	540	545	550
gca gat gat gct gag	tta cag aaa tat tca	aag ctg ctg cct att cac	1852
Ala Asp Asp Ala Glu	Leu Gln Lys Tyr Ser	Lys Leu Leu Pro Ile His	
551	556	561	566
act ctg agg ctt ggt	gtg gaa gtg gat tcc	ttt gat ggg cac cat tat	1900
Thr Leu Arg Leu Gly	Val Glu Val Asp Ser	Phe Asp Gly His His Tyr	
567	572	577	582
att tct tca att gtt	tct ggt ggt cct gtt	gat aca ttg ggt ctc cta	1948
Ile Ser Ser Ile Val	Ser Gly Gly Pro Val	Asp Thr Leu Gly Leu Leu	
583	588	593	598
cag cca gaa gat gag	ctg ctt gag gtc aat	ggc atg cag ctt tat gga	1996
Gln Pro Glu Asp Glu	Leu Leu Glu Val Asn	Gly Met Gln Leu Tyr Gly	
599	604	609	614
aaa tct cgc cga gaa	gca gtc tcc ttt ctt	aaa gaa gtg cca ccc cct	2044
Lys Ser Arg Arg Glu	Ala Val Ser Phe Leu	Lys Glu Val Pro Pro Pro	
615	620	625	630
ttt act ttg gtt tgc	tgt cgg agg ttg ttt	gat gat gaa gct tct gta	2092
Phe Thr Leu Val Cys	Cys Arg Arg Leu Phe	Asp Asp Glu Ala Ser Val	
631	636	641	646
gat gaa cca agg cgc	act gaa acc tct ctt	cct gag aca gag gtt gac	2140
Asp Glu Pro Arg Arg	Thr Glu Thr Ser Leu	Pro Glu Thr Glu Val Asp	
647	652	657	662
cac aat atg gat gtc	aat act gaa gaa gat	gat gat ggg gaa tta gca	2188
His Asn Met Asp Val	Asn Thr Glu Glu Asp	Asp Asp Gly Glu Leu Ala	
663	668	673	678
ctg tgg tcc cct gaa	gtc aag att gtt gaa	cta gta aaa gat tgt aaa	2236
Leu Trp Ser Pro Glu	Val Lys Ile Val Glu	Leu Val Lys Asp Cys Lys	
679	684	689	694
ggg ttg gga ttc agc	att ttg gat tac cag	gac cct tta gat cct aca	2284
Gly Leu Gly Phe Ser	Ile Leu Asp Tyr Gln	Asp Pro Leu Asp Pro Thr	
695	700	705	710
aga tca gtg att gtg	atc cgc tcc ctg gta	gca gat ggt gta gca gaa	2332
Arg Ser Val Ile Val	Ile Arg Ser Leu Val	Ala Asp Gly Val Ala Glu	
711	716	721	726
aga agt ggg gga cta	tta cct gga gac cgc	ctg gtc tca gtc aat gaa	2380
Arg Ser Gly Gly Leu	Leu Pro Gly Asp Arg	Leu Val Ser Val Asn Glu	
727	732	737	742
tac cgt ttg gac aac	acc tca ctt gct gaa	gct gtg gaa ata ttg aaa	2428
Tyr Arg Leu Asp Asn	Thr Ser Leu Ala Glu	Ala Val Glu Ile Leu Lys	

743	748	753	758	
gct gtg cca cca ggc	cta gta cac ctt ggc	atc tgt aag cct ttg gtg		2476
Ala Val Pro Pro Gly	Leu Val His Leu Gly	Ile Cys Lys Pro Leu Val		
759	764	769	774	
gaa gat aat gaa gaa	gaa agt tgt tat att	tta cat tca agc agt aat		2524
Glu Asp Asn Glu Glu	Glu Ser Cys Tyr Ile	Leu His Ser Ser Ser Asn		
775	780	785	790	
gaa gac aag act gaa	ttt tca gga aca att	cat gat ata aat tca tct		2572
Glu Asp Lys Thr Glu	Phe Ser Gly Thr Ile	His Asp Ile Asn Ser Ser		
791	796	801	806	
tta ata ctc gaa gca	ccc aag gga ttt aga	gat gaa cca tat ttt aaa		2620
Leu Ile Leu Glu Ala	Pro Lys Gly Phe Arg	Asp Glu Pro Tyr Phe Lys		
807	812	817	822	
gaa gaa ctt gtg gat	gaa cca ttt cta gat	ctg gga aag tct ttc cat		2668
Glu Glu Leu Val Asp	Glu Pro Phe Leu Asp	Leu Gly Lys Ser Phe His		
823	828	833	838	
tcc caa caa aaa gag	ata gag caa agc aag	gag gcc tgg gag atg cat		2716
Ser Gln Gln Lys Glu	Ile Glu Gln Ser Lys	Glu Ala Trp Glu Met His		
839	844	849	854	
gaa ttt ctg act cct	aga ttg cag gaa atg	gat gaa gaa aga gaa atg		2764
Glu Phe Leu Thr Pro	Arg Leu Gln Glu Met	Asp Glu Glu Arg Glu Met		
855	860	865	870	
ctt gtt gat gaa gaa	tat gag tta tat caa	gat ccc tca cca tcc atg		2812
Leu Val Asp Glu Glu	Tyr Glu Leu Tyr Gln	Asp Pro Ser Pro Ser Met		
871	876	881	886	
gag ttg tat ccc ttg	tcg cac att caa gag	gcc act cct gtg ccc tct		2860
Glu Leu Tyr Pro Leu	Ser His Ile Gln Glu	Ala Thr Pro Val Pro Ser		
887	892	897	902	
gtg aat gaa ctt cac	ttt ggt aca cag tgg	ttg cat gat aat gaa cca		2908
Val Asn Glu Leu His	Phe Gly Thr Gln Trp	Leu His Asp Asn Glu Pro		
903	908	913	918	
tcc gag tct caa gag	gca aga acc ggg agg	act gtc tat tcc cag gag		2956
Ser Glu Ser Gln Glu	Ala Arg Thr Gly Arg	Thr Val Tyr Ser Gln Glu		
919	924	929	934	
gca cag ccg tat ggc	tat tgc cct gaa aat	gtg atg aaa gaa aat ttt		3004
Ala Gln Pro Tyr Gly	Tyr Cys Pro Glu Asn	Val Met Lys Glu Asn Phe		
935	940	945	950	
gtc atg gag tcc cta	cca tct gta cca tca	act gaa gga aac agt caa		3052
Val Met Glu Ser Leu	Pro Ser Val Pro Ser	Thr Glu Gly Asn Ser Gln		
951	956	961	966	
caa ggc aga ttt gac	gac ctg gaa aat ctt	aat tca tta gca aaa act		3100
Gln Gly Arg Phe Asp	Asp Leu Glu Asn Leu	Asn Ser Leu Ala Lys Thr		
967	972	977	982	

agt ctg gat tta ggc atg atc ccg aat gat gtc caa ggt cct agc ttg	3148
Ser Leu Asp Leu Gly Met Ile Pro Asn Asp Val Gln Gly Pro Ser Leu	
983 988 993 998	
ctc att gac ctt cct gtt gtg gct caa agg agg gag caa gaa gat ttg	3196
Leu Ile Asp Leu Pro Val Val Ala Gln Arg Arg Glu Gln Glu Asp Leu	
999 1004 1009 1014	
cct tta tat caa cac caa gcg aca cga gtt att tcc aag gcc tca gca	3244
Pro Leu Tyr Gln His Gln Ala Thr Arg Val Ile Ser Lys Ala Ser Ala	
1015 1020 1025 1030	
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Tyr Thr Gly Met Leu Ser Ser Arg Tyr Ala Thr Asp Thr Cys Glu Leu	
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cct gag aga gaa gaa ggc gaa gga gaa gaa act cca aat ttt agc cac	3340
Pro Glu Arg Glu Glu Gly Glu Gly Glu Glu Thr Pro Asn Phe Ser His	
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tgg ggt cca ccg aga att gtt gag att ttt aga gaa ccc aat gtg tct	3388
Trp Gly Pro Pro Arg Ile Val Glu Ile Phe Arg Glu Pro Asn Val Ser	
1063 1068 1073 1078	
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Asn Gly Glu Glu Leu Lys Gly Ile Phe Ile Lys Gln Val Leu Glu Asp	
1095 1100 1105 1110	
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Ser Pro Ala Gly Lys Thr Asn Ala Leu Lys Thr Gly Asp Lys Ile Leu	
1111 1116 1121 1126	
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Glu Val Ser Gly Val Asp Leu Gln Asn Ala Ser His Ser Glu Ala Val	
1127 1132 1137 1142	
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Glu Ala Ile Lys Asn Ala Gly Asn Pro Val Val Phe Ile Val Gln Ser	
1143 1148 1153 1158	
ttg tca tcc act cca cga gtc att cct aac gta cat aac aag gcc aac	3676
Leu Ser Ser Thr Pro Arg Val Ile Pro Asn Val His Asn Lys Ala Asn	
1159 1164 1169 1174	
aaa atc acc ggt aac cag aac cag gac acc caa gaa aag aaa gaa aag	3724
Lys Ile Thr Gly Asn Gln Asn Gln Asp Thr Gln Glu Lys Lys Glu Lys	
1175 1180 1185 1190	
agg caa gga act gct cca ccg cca atg aaa ctt cct cct cct tat aaa	3772
Arg Gln Gly Thr Ala Pro Pro Pro Met Lys Leu Pro Pro Pro Tyr Lys	
1191 1196 1201 1206	

gct ctg act gat gac agt gat gaa aat gaa gaa gaa gat gcc ttt acc	3820
Ala Leu Thr Asp Asp Ser Asp Glu Asn Glu Glu Glu Asp Ala Phe Thr	
1207 1212 1217 1222	
gac caa aaa atc aga caa aga tat gca gat ctg cct gga gaa ctg cac	3868
Asp Gln Lys Ile Arg Gln Arg Tyr Ala Asp Leu Pro Gly Glu Leu His	
1223 1228 1233 1238	
att att gaa ctt gaa aaa gat aag aat gga ctt gga ctc agc ctt gct	3916
Ile Ile Glu Leu Glu Lys Asp Lys Asn Gly Leu Gly Leu Ser Leu Ala	
1239 1244 1249 1254	
ggt aat aaa gac cga tca cgc atg agc ata ttt gtg gtg gga att aac	3964
Gly Asn Lys Asp Arg Ser Arg Met Ser Ile Phe Val Val Gly Ile Asn	
1255 1260 1265 1270	
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Pro Glu Gly Pro Ala Ala Ala Asp Gly Arg Met Arg Ile Gly Asp Glu	
1271 1276 1281 1286	
ctc tta gag ata aac aat cag att ctg tat gga aga agt cac caa aat	4060
Leu Leu Glu Ile Asn Asn Gln Ile Leu Tyr Gly Arg Ser His Gln Asn	
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Ala Ser Ala Ile Ile Lys Thr Ala Pro Ser Lys Val Lys Leu Val Phe	
1303 1308 1313 1318	
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Ile Arg Asn Glu Asp Ala Val Asn Gln Met Ala Val Thr Pro Phe Pro	
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Val Pro Ser Ser Ser Pro Ser Ser Ile Glu Asp Gln Ser Gly Thr Glu	
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cct att agt agt gag gaa gat ggc agc ctc gaa gtt ggt att aaa caa	4252
Pro Ile Ser Ser Glu Glu Asp Gly Ser Leu Glu Val Gly Ile Lys Gln	
1351 1356 1361 1366	
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Leu Pro Glu Ser Glu Ser Phe Lys Leu Ala Val Ser Gln Met Lys Gln	
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Gln Lys Tyr Pro Thr Lys Val Ser Phe Ser Ser Gln Glu Ile Pro Leu	
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Ala Pro Ala Ser Ser Tyr His Ser Thr Asp Ala Asp Phe Thr Gly Tyr	
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Gly Gly Phe Gln Ala Pro Leu Ser Val Asp Pro Ala Thr Cys Pro Ile	
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Val	Ile	His	Glu	Val	Tyr	Glu	Glu	Gly	Ala	Ala	Ala	Arg	Asp	Gly	Arg	
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Asn	Ser	Ser	His	Glu	Glu	Ala	Ile	Thr	Ala	Leu	Arg	Gln	Thr	Pro	Gln	
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Lys	Val	Arg	Leu	Val	Val	Tyr	Arg	Asp	Glu	Ala	His	Tyr	Arg	Asp	Glu	
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Glu	Asn	Leu	Glu	Ile	Phe	Pro	Val	Asp	Leu	Gln	Lys	Lys	Ala	Gly	Arg	
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ggc	ctg	ggc	ctg	agc	atc	gtt	ggg	aaa	cgg	taa						4813
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Met  
1

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Leu Pro Leu Ser Asp Gly Pro Glu Gly Ser Ser Ser Arg Pro Gln Met  
2 7 12 17

ata aga gga cgc ttg tgt gat gat acc aaa cct gaa aca ttt aac cag 571  
Ile Arg Gly Arg Leu Cys Asp Asp Thr Lys Pro Glu Thr Phe Asn Gln  
18 23 28 33

ttg tgg act gtt gaa gaa cag aaa aag ctg gaa cag cta ctc atc aaa 619  
Leu Trp Thr Val Glu Glu Gln Lys Lys Leu Glu Gln Leu Leu Ile Lys  
34 39 44 49

tac cct cct gaa gaa gta gaa tct cga cgc tgg cag aag ata gca gat 667  
Tyr Pro Pro Glu Glu Val Glu Ser Arg Arg Trp Gln Lys Ile Ala Asp  
50 55 60 65

gaa ttg ggc aac agg aca gca aaa cag gtt gcc agc cga gta cag aag 715  
Glu Leu Gly Asn Arg Thr Ala Lys Gln Val Ala Ser Arg Val Gln Lys  
66 71 76 81

tat ttc ata aag cta act aaa gct ggc att cca gta cca ggc aga aca 763  
Tyr Phe Ile Lys Leu Thr Lys Ala Gly Ile Pro Val Pro Gly Arg Thr  
82 87 92 97

cca aac tta tat ata tac tcc aaa aag tct tca aca agc aga cga cag 811  
Pro Asn Leu Tyr Ile Tyr Ser Lys Lys Ser Ser Thr Ser Arg Arg Gln  
98 103 108 113

cac cct ctt aat aag cat ctc ttt aag cct tcc act ttc atg act tca 859  
His Pro Leu Asn Lys His Leu Phe Lys Pro Ser Thr Phe Met Thr Ser  
114 119 124 129

cat gaa ccg cca gtg tat atg gat gaa gat gat gac cga tct tgt ttt 907  
His Glu Pro Pro Val Tyr Met Asp Glu Asp Asp Asp Arg Ser Cys Phe  
130 135 140 145

cat agc cac atg aac act gct gtt gaa gat gca tca gat gac gaa agt 955  
His Ser His Met Asn Thr Ala Val Glu Asp Ala Ser Asp Asp Glu Ser  
146 151 156 161

att cct atc atg tat agg aat tta cct gaa tat aaa gaa cta tta cag 1003  
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162 167 172 177

ttt aaa aag tta aag aag cag aaa ctt cag caa atg caa gct gaa agt 1051  
Phe Lys Lys Leu Lys Lys Gln Lys Leu Gln Gln Met Gln Ala Glu Ser  
178 183 188 193

gga ttt gtg caa cat gtg ggc ttt aag tgt gat aac tgt ggc ata gaa 1099  
Gly Phe Val Gln His Val Gly Phe Lys Cys Asp Asn Cys Gly Ile Glu  
194 199 204 209

ccc atc cag ggt gtt cgg tgg cat tgc cag gat tgt cct cca gaa atg	1147
Pro Ile Gln Gly Val Arg Trp His Cys Gln Asp Cys Pro Pro Glu Met	
210 215 220 225	
tct ttg gat ttc tgt gat tct tgt tca gac tgt cta cat gaa aca gat	1195
Ser Leu Asp Phe Cys Asp Ser Cys Ser Asp Cys Leu His Glu Thr Asp	
226 231 236 241	
att cac aag gaa gat cac caa tta gaa cct att tat agg tca gag aca	1243
Ile His Lys Glu Asp His Gln Leu Glu Pro Ile Tyr Arg Ser Glu Thr	
242 247 252 257	
ttc tta gac aga gac tac tgt gtg tct cag ggc acc agt tac aat tac	1291
Phe Leu Asp Arg Asp Tyr Cys Val Ser Gln Gly Thr Ser Tyr Asn Tyr	
258 263 268 273	
ctt gac cca aac tac ttt cca gca aac aga tga catggaag agaacatcat	1342
Leu Asp Pro Asn Tyr Phe Pro Ala Asn Arg *	
274 279 284	
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aagattctct gtttcccag aaatgacact cacagcatga gagcttctcg agtgttctcg	1462
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agtggtagta actgtgtaaa gtttctaatt cacaacatta attcctttaa aatacacagc	2122
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aatcatata tatggtaata atttccctct tttgtagtct gcacaagatc cataaaagat	2242
tgtattttta ttactattta aacaagtgat taaatttagt ctgcacagtg agcaagggtt	2302
cacatgcatt cttttatact gctggatttt gttgtgcac atttaaaaca ttttgtatgt	2362
ttcttcttat ctgtgtatac agtatgttct tgaatgatgt tcatttgtca ggagaactgt	2422

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2470

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tcagagacta ttacagacga ttgctgtact cgaggctcag cgttctcaag cagtccaaga 180  
ccttgaaagt ttaggcaggc accagagaga agcactgaaa aatccattg gatttgtgga 240  
aaaactccag aagaaggctg atattgggct tccatatcca cagagagttg ttcaattgcc 300  
tgagatcgta tgggaccaat atacccatag ccttgggaat tttgaaagag aatttaaaaa 360  
tcgtaaaaaga catactagaa gagttaagct agtttttgat aaagtaggtt tacctgctag 420  
acaaaaaagt ccttttagatc ctaagaagga tggagagtcc ctttcatatt ct atg 475  
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ttg cct ttg agt gat ggt cca gaa ggc tca agc agt cgt cct cag atg 523  
Leu Pro Leu Ser Asp Gly Pro Glu Gly Ser Ser Ser Arg Pro Gln Met  
2 7 12 17  
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Ile Arg Gly Arg Leu Cys Asp Asp Thr Lys Pro Glu Thr Phe Asn Gln  
18 23 28 33  
ttg tgg act gtt gaa gaa cag aaa aag ctg gaa cag cta ctc atc aaa 619  
Leu Trp Thr Val Glu Glu Gln Lys Lys Leu Glu Gln Leu Leu Ile Lys  
34 39 44 49  
tac cct cct gaa gaa gta gaa tct cga cgc tgg cag aag ata gca gat 667  
Tyr Pro Pro Glu Glu Val Glu Ser Arg Arg Trp Gln Lys Ile Ala Asp  
50 55 60 65  
gaa ttg ggc aac agg aca gca aaa cag tct tca aca agc aga cga cag 715  
Glu Leu Gly Asn Arg Thr Ala Lys Gln Ser Ser Thr Ser Arg Arg Gln  
66 71 76 81  
cac cct ctt aat aag cat ctc ttt aag cct tcc act ttc atg act tca 763  
His Pro Leu Asn Lys His Leu Phe Lys Pro Ser Thr Phe Met Thr Ser  
82 87 92 97

cat gaa ccg cca gtg tat atg gat gaa gat gat gac cga tct tgt ttt	811
His Glu Pro Pro Val Tyr Met Asp Glu Asp Asp Asp Arg Ser Cys Phe	
98 103 108 113	
cat agc cac atg aac act gct gtt gaa gat gca tca gat gac gaa agt	859
His Ser His Met Asn Thr Ala Val Glu Asp Ala Ser Asp Asp Glu Ser	
114 119 124 129	
att cct atc atg tat agg aat tta cct gaa tat aaa gaa cta tta cag	907
Ile Pro Ile Met Tyr Arg Asn Leu Pro Glu Tyr Lys Glu Leu Leu Gln	
130 135 140 145	
ttt aaa aag tta aag aag cag aaa ctt cag caa atg caa gct gaa agt	955
Phe Lys Lys Leu Lys Lys Gln Lys Leu Gln Gln Met Gln Ala Glu Ser	
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Gly Phe Val Gln His Val Gly Phe Lys Cys Asp Asn Cys Gly Ile Glu	
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Pro Ile Gln Gly Val Arg Trp His Cys Gln Asp Cys Pro Pro Glu Met	
178 183 188 193	
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Ser Leu Asp Phe Cys Asp Ser Cys Ser Asp Cys Leu His Glu Thr Asp	
194 199 204 209	
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Ile His Lys Glu Asp His Gln Leu Glu Pro Ile Tyr Arg Ser Glu Thr	
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Phe Leu Asp Arg Asp Tyr Cys Val Ser Gln Gly Thr Ser Tyr Asn Tyr	
226 231 236 241	
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Leu Asp Pro Asn Tyr Phe Pro Ala Asn Arg *	
242 247 252	
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tcaagtacag ctctgcaccg ttgtggctct agatcactgt tcagcagctg aacattcctg	1426
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caatgatggg gtttgcttct aggatataca ctttaaaaga actcactgtc ccagtgggtg	1726
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accacaatga attgtcctta attaccaaca gtgaagcact acaggaggca actgtggcat 1846
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Tyr Thr Tyr Pro Glu Asn Trp Arg Ala Phe Lys Ala Leu Ile Ala Ala
13              18              23              28

cag tac agc ggg gct cat gtc cgc gtg ctc tcc gca cca ccc cac ttc      144
Gln Tyr Ser Gly Ala His Val Arg Val Leu Ser Ala Pro Pro His Phe
29              34              39              44

cat ttt ggc caa acc aac cgc acc cct gaa ttt ctc cgc aaa ttt cct      192
His Phe Gly Gln Thr Asn Arg Thr Pro Glu Phe Leu Arg Lys Phe Pro
45              50              55              60

gcc ggc aag gtc cca gca ttt gag ggt gat gat gga ttc tgt gtg ttt      240
Ala Gly Lys Val Pro Ala Phe Glu Gly Asp Asp Gly Phe Cys Val Phe
61              66              71              76

gag agc aac gcc att gcc tac tat gtg agc aat gag gag ctg cgg gga      288
Glu Ser Asn Ala Ile Ala Tyr Tyr Val Ser Asn Glu Glu Leu Arg Gly
77              82              87              92

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agt act cca gag gca gca gcc cag gtg gtg cag tgg gtg agc ttt gct	336
Ser Thr Pro Glu Ala Ala Ala Gln Val Val Gln Trp Val Ser Phe Ala	
93 98 103 108	
gat tcc gat ata gtg ccc cca gcc agt acc tgg gtg ttc ccc acc ttg	384
Asp Ser Asp Ile Val Pro Pro Ala Ser Thr Trp Val Phe Pro Thr Leu	
109 114 119 124	
ggc atc atg cac cac aac aaa cag gcc act gag aat gca aag gag gaa	432
Gly Ile Met His His Asn Lys Gln Ala Thr Glu Asn Ala Lys Glu Glu	
125 130 135 140	
gtg agg cga att ctg ggg ctg ctg gat gct tac ttg aag acg agg act	480
Val Arg Arg Ile Leu Gly Leu Leu Asp Ala Tyr Leu Lys Thr Arg Thr	
141 146 151 156	
ttt ctg gtg ggc gaa cga gtg aca ttg gct gac atc aca gtt gtc tgc	528
Phe Leu Val Gly Glu Arg Val Thr Leu Ala Asp Ile Thr Val Val Cys	
157 162 167 172	
acc ctg ttg tgg ctc tat aag cag gtt cta gag cct tct ttc cgc cag	576
Thr Leu Leu Trp Leu Tyr Lys Gln Val Leu Glu Pro Ser Phe Arg Gln	
173 178 183 188	
gcc ttt ccc aat acc aac cgc tgg ttc ctc acc tgc att aac cag ccc	624
Ala Phe Pro Asn Thr Asn Arg Trp Phe Leu Thr Cys Ile Asn Gln Pro	
189 194 199 204	
cag ttc cgg gct gtc ttg ggc gaa gtg aaa ctg tgt gag aag atg gcc	672
Gln Phe Arg Ala Val Leu Gly Glu Val Lys Leu Cys Glu Lys Met Ala	
205 210 215 220	
cag ttt gat gct aaa aag ttt gca gag acc caa cct aaa aag gac aca	720
Gln Phe Asp Ala Lys Lys Phe Ala Glu Thr Gln Pro Lys Lys Asp Thr	
221 226 231 236	
cca cgg aaa gag aag ggt tca cgg gaa gag aag cag aag ccc cag gct	768
Pro Arg Lys Glu Lys Gly Ser Arg Glu Glu Lys Gln Lys Pro Gln Ala	
237 242 247 252	
gag cgg aag gag gag aaa aag gcg gct gcc cct gct cct gag gag gag	816
Glu Arg Lys Glu Glu Lys Lys Ala Ala Ala Pro Ala Pro Glu Glu Glu	
253 258 263 268	
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Met Asp Glu Cys Glu Gln Ala Leu Ala Ala Glu Pro Lys Ala Lys Asp	
269 274 279 284	
ccc ttc gct cac ctg ccc aag agt acc ttt gtg ttg gat gaa ttt aag	912
Pro Phe Ala His Leu Pro Lys Ser Thr Phe Val Leu Asp Glu Phe Lys	
285 290 295 300	
cgc aag tac tcc aat gag gac aca ctc tct gtg gca ctg cca tat ttc	960
Arg Lys Tyr Ser Asn Glu Asp Thr Leu Ser Val Ala Leu Pro Tyr Phe	
301 306 311 316	

tgg gag cac ttt gat aag gac ggc tgg tcc ctg tgg tac tca gag tat	1008
Trp Glu His Phe Asp Lys Asp Gly Trp Ser Leu Trp Tyr Ser Glu Tyr	
317 322 327 332	
cgc ttc cct gaa gaa ctc act cag acc ttc atg agc tgc aat ctc atc	1056
Arg Phe Pro Glu Glu Leu Thr Gln Thr Phe Met Ser Cys Asn Leu Ile	
333 338 343 348	
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Thr Gly Met Phe Gln Arg Leu Asp Lys Leu Arg Lys Asn Ala Phe Ala	
349 354 359 364	
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Ser Val Ile Leu Phe Gly Thr Asn Asn Ser Ser Ser Ile Ser Gly Val	
365 370 375 380	
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Trp Val Phe Arg Gly Gln Glu Leu Ala Phe Pro Leu Ser Pro Asp Trp	
381 386 391 396	
cag gtg gac tac gag tca tac aca tgg cgg aaa ctg gat cct ggc agc	1248
Gln Val Asp Tyr Glu Ser Tyr Thr Trp Arg Lys Leu Asp Pro Gly Ser	
397 402 407 412	
gag gag acc cag acg ctg gtt cga gag tac ttt tcc tgg gag ggg gcc	1296
Glu Glu Thr Gln Thr Leu Val Arg Glu Tyr Phe Ser Trp Glu Gly Ala	
413 418 423 428	
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Phe Gln His Val Ala Lys Pro Ser Ile Arg Ala Arg Ser Ser Ser Glu	
429 434 439 444	
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His Leu Leu Pro Ser Pro Ser Cys Leu His Leu Pro Phe Arg Glu Met	
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Gly Val Ile Lys Gly Asn *	
461 466	

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caccaactgg ttttgtaaca gttgcgagaa ccttctcctt ctttttcttt ccaacttgga 240

cgctgcaga atg gct ccc gca aag aag ggt ggc gag aag aaa aag ggc 288  
Met Ala Pro Ala Lys Lys Gly Gly Glu Lys Lys Lys Gly  
1 5 10

cgt tct gcc atc aac gaa gtg gta acc cga gaa tac acc atc aac att 336  
Arg Ser Ala Ile Asn Glu Val Val Thr Arg Glu Tyr Thr Ile Asn Ile  
14 19 24 29

cac aag cgc atc cat gga gtg ggc ttc aag aag cgt gca cct cgg gca 384  
His Lys Arg Ile His Gly Val Gly Phe Lys Lys Arg Ala Pro Arg Ala  
30 35 40 45

ctc aaa gag att cgg aaa ttt gcc atg aag gag atg gga act cca gat 432  
Leu Lys Glu Ile Arg Lys Phe Ala Met Lys Glu Met Gly Thr Pro Asp  
46 51 56 61

gtg cgc att gac acc agg ctc aac aaa gct gtc tgg gcc aaa gga ata 480  
Val Arg Ile Asp Thr Arg Leu Asn Lys Ala Val Trp Ala Lys Gly Ile  
62 67 72 77

agg aat gtg cca tac cga atc cgt gtg cgg ctg tcc aga aaa cgt aat 528  
Arg Asn Val Pro Tyr Arg Ile Arg Val Arg Leu Ser Arg Lys Arg Asn  
78 83 88 93

gag gat gaa gat tca cca aat aag cta tat act ttg gtt acc tat gta 576  
Glu Asp Glu Asp Ser Pro Asn Lys Leu Tyr Thr Leu Val Thr Tyr Val  
94 99 104 109

cct gtt acc act ttc aaa aat cta cag aca gtc aat gtg gat gag aac 624  
Pro Val Thr Thr Phe Lys Asn Leu Gln Thr Val Asn Val Asp Glu Asn  
110 115 120 125

taa tcgc tgatcgtcag atcaaataaa gttataaaat tgccttcatg tttttgttct 681  
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126

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 8 13 18 23

ggc ccc cct ggc ccc cct ggc ttc cca gga aaa cca ggc cat gga aag 147  
 Gly Pro Pro Gly Pro Pro Gly Phe Pro Gly Lys Pro Gly His Gly Lys  
 24 29 34 39

cca gga ctc cat ggg cag cct ggc cct gct ggg ccc cct ggc ttc tcc 195  
 Pro Gly Leu His Gly Gln Pro Gly Pro Ala Gly Pro Pro Gly Phe Ser  
 40 45 50 55

cgg atg ggc aag gct ggt ccc cca ggg ctc cct ggc aac gtc ggg cca 243  
 Arg Met Gly Lys Ala Gly Pro Pro Gly Leu Pro Gly Asn Val Gly Pro  
 56 61 66 71

cca ggg cag ccg ggg ctt cgg ggg gag cca gga ata cga ggg gac cag 291  
 Pro Gly Gln Pro Gly Leu Arg Gly Glu Pro Gly Ile Arg Gly Asp Gln  
 72 77 82 87

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 Gly Leu Arg Gly Pro Pro Gly Pro Pro Gly Leu Pro Gly Pro Ser Gly  
 88 93 98 103

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 Ile Thr Ile Pro Gly Lys Pro Gly Ala Gln Gly Val Pro Gly Pro Pro  
 104 109 114 119

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 Gly Phe Gln Gly Glu Pro Gly Pro Gln Gly Glu Pro Gly Pro Pro Gly  
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 Asp Arg Gly Leu Lys Gly Asp Asn Gly Val Gly Gln Pro Gly Leu Pro  
 136 141 146 151

ggg gcc cca ggg cag ggg ggt gcc ccc ggc ccc ccc ggc ctc cct ggt 531  
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 152 157 162 167

cca gct ggc tta ggc aaa cct ggt ttg gat ggg ctt cct ggg gcc cca 579  
 Pro Ala Gly Leu Gly Lys Pro Gly Leu Asp Gly Leu Pro Gly Ala Pro  
 168 173 178 183

gga gac aag ggt gag tct ggg cct cct gga gtt cca ggc ccc agg ggg 627

Gly Asp Lys Gly Glu Ser Gly Pro Pro Gly Val Pro Gly Pro Arg Gly	
184 189 194 199	
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Glu Pro Gly Ala Val Gly Pro Lys Gly Pro Pro Gly Val Asp Gly Val	
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216 221 226 231	
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Ala Lys Gly Glu Pro Gly Thr Arg Gly Pro Pro Gly Leu Ile Gly Pro	
232 237 242 247	
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Thr Gly Tyr Gly Met Pro Gly Leu Pro Gly Pro Lys Gly Asp Arg Gly	
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Pro Ala Gly Val Pro Gly Leu Leu Gly Asp Arg Gly Glu Pro Gly Glu	
264 269 274 279	
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Asp Gly Glu Pro Gly Glu Gln Gly Pro Gln Gly Leu Gly Gly Pro Pro	
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Gly Leu Pro Gly Ser Ala Gly Leu Pro Gly Arg Arg Gly Pro Pro Gly	
296 301 306 311	
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Pro Lys Gly Glu Ala Gly Pro Gly Gly Pro Pro Gly Val Pro Gly Ile	
312 317 322 327	
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Arg Gly Asp Gln Gly Pro Ser Gly Leu Ala Gly Lys Pro Gly Val Pro	
328 333 338 343	
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Gly Glu Arg Gly Leu Pro Gly Ala His Gly Pro Pro Gly Pro Thr Gly	
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ccc aag ggt gag ccg ggt ttc acg ggt cgc cct gga gga cca ggg gtg	1155
Pro Lys Gly Glu Pro Gly Phe Thr Gly Arg Pro Gly Gly Pro Gly Val	
360 365 370 375	
gca gga gcc ctg ggg cag aaa ggt gac ttg ggg ctc cct ggg cag cct	1203
Ala Gly Ala Leu Gly Gln Lys Gly Asp Leu Gly Leu Pro Gly Gln Pro	
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Gly Leu Arg Gly Pro Ser Gly Ile Pro Gly Leu Gln Gly Pro Ala Gly	
392 397 402 407	
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Pro Ile Gly Pro Gln Gly Leu Pro Gly Leu Lys Gly Glu Pro Gly Leu	

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ggc atc gca ggc ttg Gly Ile Ala Gly Leu 472	cac ctg ccc aac ggc His Leu Pro Asn Gly 477	ggt gtg gag ggt gcc gtg Gly Val Glu Gly Ala Val 482	1491	
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cat gcc aca ccg gcc His Ala Thr Pro Ala 504	ttc act gcg gtg ctc Phe Thr Ala Val Leu 509	acc tcg ccc tta ccc gcc Thr Ser Pro Leu Pro Ala 514	1587	
tcg ggc atg ccc gtg Ser Gly Met Pro Val 520	aaa ttt gac cgg act Lys Phe Asp Arg Thr 525	ctc tac aat ggc cac agc Leu Tyr Asn Gly His Ser 530	1635	
ggc tac aac cca gcc Gly Tyr Asn Pro Ala 536	act ggc atc ttc acc Thr Gly Ile Phe Thr 541	tgc cct gtg ggc ggc gtc Cys Pro Val Gly Gly Val 546	1683	
tac tac ttt gct tac Tyr Tyr Phe Ala Tyr 552	cat gtg cac gtc aag His Val His Val Lys 557	ggc acc aac gtg tgg gtg Gly Thr Asn Val Trp Val 562	1731	
gcc ctg tac aag aac Ala Leu Tyr Lys Asn 568	aac gtg ccg gcc acc Asn Val Pro Ala Thr 573	tat acc tac gat gag tac Tyr Thr Tyr Asp Glu Tyr 578	1779	
aag aag ggc tac ctg Lys Lys Gly Tyr Leu 584	gac cag gca tct ggt Asp Gln Ala Ser Gly 589	ggg gcc gtg ctc cag ctg Gly Ala Val Leu Gln Leu 594	1827	
cgg ccc aac gac cag Arg Pro Asn Asp Gln 600	gtc tgg gtg cag atg Val Trp Val Gln Met 605	ccg tcg gac cag gcc aac Pro Ser Asp Gln Ala Asn 610	1875	
ggc ctc tac tcc acg Gly Leu Tyr Ser Thr 616	gag tac atc cac tcc Glu Tyr Ile His Ser 621	tcc ttt tca gga ttc ttg Ser Phe Ser Gly Phe Leu 626	1923	
ctc tgc ccc aca taa Leu Cys Pro Thr *	cccgcggggg gtgtcctgct 632	gccctggcct cctccccctt 632	1978	

agtggtagag cgaccttttc aattacaaag aacctcctgg aaaaaaaaaac aaaagctgaa 2038  
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 Met  
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 Asp Ser Pro Arg Ala Gly Thr His Gln Gly Pro Leu Asp Ala Glu Thr  
 2 7 12 17

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 Glu Val Gly Ala Asp Arg Cys Thr Ser Thr Ala Tyr Gln Glu Gln Arg  
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ccc cag gtg gag caa gtt ggc aaa cag gct cct ctc tcc cca ggg ctg 499  
 Pro Gln Val Glu Gln Val Gly Lys Gln Ala Pro Leu Ser Pro Gly Leu  
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ccg gca atg ggg ggg cct ggc ccc ggc ccc tgt gag gac ccc gcg ggt 547  
 Pro Ala Met Gly Gly Pro Gly Pro Gly Pro Cys Glu Asp Pro Ala Gly  
 50 55 60 65

gct ggg gga gca ggt gca ggg ggc tcc gag ccc ctg gtg act gtc acc 595

Ala Gly Gly Ala Gly	Ala Gly Gly Ser Glu Pro Leu Val Thr Val Thr	
66	71 76 81	
gtg cag tgc gcc ttc aca gtg gcc ctg agg gca cga aga gga gcc gac		643
Val Gln Cys Ala Phe Thr Val Ala Leu Arg Ala Arg Arg Gly Ala Asp		
82	87 92 97	
ctg tcc agc ctg cgg gca ctg ctg ggc caa gcc ctc cct cac cag gcc		691
Leu Ser Ser Leu Arg Ala Leu Leu Gly Gln Ala Leu Pro His Gln Ala		
98	103 108 113	
cag ctt ggg caa ctc agt tac cta gcc cca ggt gag gac ggg cac tgg		739
Gln Leu Gly Gln Leu Ser Tyr Leu Ala Pro Gly Glu Asp Gly His Trp		
114	119 124 129	
gtc ccc atc ccc gag gag gag tcg ctg cag agg gcc tgg cag gac gca		787
Val Pro Ile Pro Glu Glu Glu Ser Leu Gln Arg Ala Trp Gln Asp Ala		
130	135 140 145	
gct gcc tgc ccc agg ggg ctg cag ctg cag tgc agg gga gcc ggg ggt		835
Ala Ala Cys Pro Arg Gly Leu Gln Leu Gln Cys Arg Gly Ala Gly Gly		
146	151 156 161	
cgg ccg gtc ctc tac cag gtg gtg gcc cag cac agc tac tcc gcc cag		883
Arg Pro Val Leu Tyr Gln Val Val Ala Gln His Ser Tyr Ser Ala Gln		
162	167 172 177	
ggg cca gag gac ctg ggc ttc cga cag ggg gac acg gtg gac gtc ctg		931
Gly Pro Glu Asp Leu Gly Phe Arg Gln Gly Asp Thr Val Asp Val Leu		
178	183 188 193	
tgt gaa gtg gac cag gca tgg ctg gag ggc cac tgt gac ggc cgc atc		979
Cys Glu Val Asp Gln Ala Trp Leu Glu Gly His Cys Asp Gly Arg Ile		
194	199 204 209	
ggc atc ttc ccc aag tgc ttc gtg gtc ccc gcc ggc cct cgg atg tca		1027
Gly Ile Phe Pro Lys Cys Phe Val Val Pro Ala Gly Pro Arg Met Ser		
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gga gcc ccc ggc cgc ctg ccc cga tcc cag cag gga gat cag ccc taa		1075
Gly Ala Pro Gly Arg Leu Pro Arg Ser Gln Gln Gly Asp Gln Pro *		
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gcggatgcac acaaatgaaa ccctcacttc aacctgaaga cattcgacaca tgagttacgt	180
agagggacct gcaggaagcg gtagagaaaa cataaggctt atgcgtttta tttccacacc	240
aatttcagga tctttgtcac tgacagcagc actaagactt gttaacttta tatagttaag	300
aagaacaagg ctgagcgcga tgactcacgc ctgtaagcct agaactttgg gaggccaaaag	360
caggcagact gcttgagccc aggagtcca gaccagcctg ggcaacatgg caacacccca	420
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gagatctcgc cactgcactc cagtctggac gacagagtga gactcagtct caaataaata	600
aataaataca taaatataag gaaaaaata aagctgcttt ctctcttcc tctcttttg	660
tctcatctgg ctctgctcca ggcattctgcc aca atg tgg gtg ctt aca cct gct	714
Met Trp Val Leu Thr Pro Ala	
1 5	
gct ttt gct ggg aag ctg ttg agt gtg ttc agg caa cct ctg agc tct	762
Ala Phe Ala Gly Lys Leu Leu Ser Val Phe Arg Gln Pro Leu Ser Ser	
8 13 18 23	
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Leu Trp Arg Ser Leu Val Pro Leu Phe Cys Trp Leu Arg Ala Thr Phe	
24 29 34 39	
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Trp Leu Leu Ala Thr Lys Arg Arg Lys Gln Gln Leu Val Leu Arg Gly	
40 45 50 55	
cca gat gag acc aaa gag gag gaa gag gac cct cct ctg ccc acc acc	906
Pro Asp Glu Thr Lys Glu Glu Glu Glu Asp Pro Pro Leu Pro Thr Thr	
56 61 66 71	
cca acc agc gtc aac tat cac ttc act cgc cag tgc aac tac aaa tgc	954
Pro Thr Ser Val Asn Tyr His Phe Thr Arg Gln Cys Asn Tyr Lys Cys	
72 77 82 87	
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Gly Phe Cys Phe His Thr Ala Lys Thr Ser Phe Val Leu Pro Leu Glu	
88 93 98 103	
gaa gca aag aga gga ttg ctt ttg ctt aag gaa gct ggt atg gag aag	1050
Glu Ala Lys Arg Gly Leu Leu Leu Lys Glu Ala Gly Met Glu Lys	
104 109 114 119	
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Ile Asn Phe Ser Gly Gly Glu Pro Phe Leu Gln Asp Arg Gly Glu Tyr	

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Leu Gly Lys Leu Val Arg Phe Cys Lys Val Glu Leu Arg Leu Pro Ser				
136	141	146	151	
gtg acg atc gtg agc aat gga agc ctg atc cgg gag agg tgg ttc cag				1194
Val Thr Ile Val Ser Asn Gly Ser Leu Ile Arg Glu Arg Trp Phe Gln				
152	157	162	167	
aat tat ggt gag tat ttg gac att ctc gct atc tcc tgt gac agc ttt				1242
Asn Tyr Gly Glu Tyr Leu Asp Ile Leu Ala Ile Ser Cys Asp Ser Phe				
168	173	178	183	
gac gag gaa gtc aat gtc ctt att ggc cgt ggc caa gga aag aag aac				1290
Asp Glu Glu Val Asn Val Leu Ile Gly Arg Gly Gln Gly Lys Lys Asn				
184	189	194	199	
cat gtg gaa aac ctt caa aag ctg agg agg tgg tgt agg gat tat aga				1338
His Val Glu Asn Leu Gln Lys Leu Arg Arg Trp Cys Arg Asp Tyr Arg				
200	205	210	215	
gtc gct ttc aag ata aat tct gtc att aat cgt ttc aac gtg gaa gag				1386
Val Ala Phe Lys Ile Asn Ser Val Ile Asn Arg Phe Asn Val Glu Glu				
216	221	226	231	
gac atg acg gaa cag atc aaa gca cta aac cct gtc cgc tgg aaa gtg				1434
Asp Met Thr Glu Gln Ile Lys Ala Leu Asn Pro Val Arg Trp Lys Val				
232	237	242	247	
ttc cag tgc ctc tta att gag ggt gag aat tgt gga gaa gat gct cta				1482
Phe Gln Cys Leu Leu Ile Glu Gly Glu Asn Cys Gly Glu Asp Ala Leu				
248	253	258	263	
aga gaa gca gaa aga ttt gtt att ggt gat gaa gaa ttt gaa aga ttc				1530
Arg Glu Ala Glu Arg Phe Val Ile Gly Asp Glu Glu Phe Glu Arg Phe				
264	269	274	279	
ttg gag cgc cac aaa gaa gtg tcc tgc ttg gtg cct gaa tct aac cag				1578
Leu Glu Arg His Lys Glu Val Ser Cys Leu Val Pro Glu Ser Asn Gln				
280	285	290	295	
aag atg aaa gac tcc tac ctt att ctg gat gaa tat atg cgc ttt ctg				1626
Lys Met Lys Asp Ser Tyr Leu Ile Leu Asp Glu Tyr Met Arg Phe Leu				
296	301	306	311	
aac tgt aga aag gga cgg aag gac cct tcc aag tcc atc ctg gat gtt				1674
Asn Cys Arg Lys Gly Arg Lys Asp Pro Ser Lys Ser Ile Leu Asp Val				
312	317	322	327	
ggt gta gaa gaa gct ata aaa ttc agt gga ttt gat gaa aag atg ttt				1722
Gly Val Glu Glu Ala Ile Lys Phe Ser Gly Phe Asp Glu Lys Met Phe				
328	333	338	343	
ctg aag cga gga gga aaa tac ata tgg agt aag gct gat ctg aag ctg				1770
Leu Lys Arg Gly Gly Lys Tyr Ile Trp Ser Lys Ala Asp Leu Lys Leu				
344	349	354	359	



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 Asp Trp \*  
 360

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tcctcacage cttcctgtgg ctgtgttttt ggccctgata gcccctatggc acaactgcac      240
tttgccctcac ctaggcctgt ggcttcttgc ctggcaggtg ccacttctcc acttttaagc      300
agtgccaaaga gtggctctca cggctaagcc gagccacagc aagacctgcc aagcctgaag      360
acctctttgc ctttgccctac catgcctggt gcctggggct gaccgaggag gaccagcaca      420

ctcacctatg tcagccaggt gagcacatac gttgtcgaca ggaggcggag cttgcaagg      479
atg ggc ttt gac ctg cag aac gtc tgg aga gtc tca cac atc aac agc      527
Met Gly Phe Asp Leu Gln Asn Val Trp Arg Val Ser His Ile Asn Ser
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aac tac aaa ttg tgc ccc agt tac ccc cag aag ctg ctg gtt cct gtg      575
Asn Tyr Lys Leu Cys Pro Ser Tyr Pro Gln Lys Leu Leu Val Pro Val
  17             22             27             32

tgg atc act gac aaa gag ctg gag aac gtg gct tcc ttc cgc tcc tgg      623
Trp Ile Thr Asp Lys Glu Leu Glu Asn Val Ala Ser Phe Arg Ser Trp
  33             38             43             48

aag cgg att ccc gtg gtt gtg tat aga cac ttg cgc aat ggg gct gcc      671
Lys Arg Ile Pro Val Val Val Tyr Arg His Leu Arg Asn Gly Ala Ala
  49             54             59             64

atc gcc cgc tgc agc cag cca gag atc agc tgg tgg ggc tgg cgc aat      719
Ile Ala Arg Cys Ser Gln Pro Glu Ile Ser Trp Trp Gly Trp Arg Asn
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gct gat gat gag tac ctg gtc acg tcc att gct aaa gcc tgt gcc ctg      767
Ala Asp Asp Glu Tyr Leu Val Thr Ser Ile Ala Lys Ala Cys Ala Leu
  81             86             91             96

gac ccg ggg aca agg gcc act ggg ggc tcc ctc agc acc ggg aat aat      815
Asp Pro Gly Thr Arg Ala Thr Gly Gly Ser Leu Ser Thr Gly Asn Asn
  97             102            107            112

gat acc agc gag gcg tgt gat gct gac ttt gat tct tct ctg act gcg      863
Asp Thr Ser Glu Ala Cys Asp Ala Asp Phe Asp Ser Ser Leu Thr Ala
  113            118            123            128

tgc tct gga gtg gag agc aca gca gct cct caa aag ctg ctg atc ctg      911
Cys Ser Gly Val Glu Ser Thr Ala Ala Pro Gln Lys Leu Leu Ile Leu
  129            134            139            144
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Gly Cys Glu Cys Glu Glu Tyr Tyr Pro Asn Cys Glu Val Val Phe Met	
161 166 171 176	
gga atg gcc aac atc cat gcc atc cgg aac agc ttt cag tac ctc cgg	1055
Gly Met Ala Asn Ile His Ala Ile Arg Asn Ser Phe Gln Tyr Leu Arg	
177 182 187 192	
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Ala Val Cys Ser Gln Met Pro Asp Pro Ser Asn Trp Leu Ser Ala Leu	
193 198 203 208	
gag agt acc aaa tgg ctg cag cac ttg tcg gtg atg cta aaa gca gct	1151
Glu Ser Thr Lys Trp Leu Gln His Leu Ser Val Met Leu Lys Ala Ala	
209 214 219 224	
gtg ctg gtg gct aat aca gta gac cgg gaa ggc cgg cct gtg ctg gta	1199
Val Leu Val Ala Asn Thr Val Asp Arg Glu Gly Arg Pro Val Leu Val	
225 230 235 240	
cac tgc tca gat ggc tgg gac cgc aca ccg cag atc gta gcc ctg gcc	1247
His Cys Ser Asp Gly Trp Asp Arg Thr Pro Gln Ile Val Ala Leu Ala	
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Lys Ile Leu Leu Asp Pro Tyr Tyr Arg Thr Leu Glu Gly Phe Gln Val	
257 262 267 272	
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Leu Val Glu Ser Asp Trp Leu Asp Phe Gly His Lys Phe Gly Asp Arg	
273 278 283 288	
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Cys Gly His Gln Glu Asn Val Glu Asp Gln Asn Glu Gln Cys Pro Val	
289 294 299 304	
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Phe Leu Gln Trp Leu Asp Ser Val His Gln Leu Leu Lys Gln Phe Pro	
305 310 315 320	
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Cys Met Phe Glu Phe Asn Glu Ala Phe Leu Val Lys Leu Val Gln His	
321 326 331 336	
aca tac tcc tgc ctc tac ggc acc ttc ctg gcc aac aac ccc tgt gag	1535
Thr Tyr Ser Cys Leu Tyr Gly Thr Phe Leu Ala Asn Asn Pro Cys Glu	
337 342 347 352	
cga gag aag cgc aac atc tac aag cgg acc tgc tct gtg tgg gcg ctc	1583
Arg Glu Lys Arg Asn Ile Tyr Lys Arg Thr Cys Ser Val Trp Ala Leu	
353 358 363 368	

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tca gac atg gtc ctg cat cct gtt tgt cat gtc cgg gcc ctg cac ctc	1679
Ser Asp Met Val Leu His Pro Val Cys His Val Arg Ala Leu His Leu	
385 390 395 400	
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Trp Thr Ala Val Tyr Leu Pro Ala Ser Ser Pro Cys Thr Leu Gly Glu	
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Glu Asn Met Asp Leu Tyr Leu Ser Pro Val Ala Gln Ser Gln Glu Phe	
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433 438 443 448	
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449 454 459 464	
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Asp Pro Asn Leu Asn Asn His Cys Gln Glu Val Arg Val Gly Leu Glu	
465 470 475 480	
ccc tgg cac agc aat cct gag gga tca gag aca agc ttt gtg gac tct	1967
Pro Trp His Ser Asn Pro Glu Gly Ser Glu Thr Ser Phe Val Asp Ser	
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Gly Val Gly Gly Pro Gln Gln Thr Val Gly Glu Val Gly Leu Pro Pro	
497 502 507 512	
cct ctg ccc agc agc cag aaa gac tac ttg agc aat aaa cct ttc aag	2063
Pro Leu Pro Ser Ser Gln Lys Asp Tyr Leu Ser Asn Lys Pro Phe Lys	
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agt cac aaa agc tgt tct cca agt tac aaa ctg ctt aat acc gca gtg	2111
Ser His Lys Ser Cys Ser Pro Ser Tyr Lys Leu Leu Asn Thr Ala Val	
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Pro Arg Glu Met Lys Ser Asn Thr Ser Asp Pro Glu Ile Lys Val Leu	
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Gly Arg Thr Leu Asp Gly Ile Gly Glu Pro Pro Glu His Cys Pro Glu	
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Gly Val Cys Asn Phe	Pro Glu Ser Ser Gln	Asn Ser Pro Thr Gly Thr	
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625	630	635	640
gtt ctt gat cac agc	ctc agc acc gtt tgc	aac cca ccg agt gct gcc	2447
Val Leu Asp His Ser	Leu Ser Thr Val Cys	Asn Pro Pro Ser Ala Ala	
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tgc caa act cct cta	gac cca agc act gac	ttc ctc aac caa gat ccc	2495
Cys Gln Thr Pro Leu	Asp Pro Ser Thr Asp	Phe Leu Asn Gln Asp Pro	
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tca ggg tct gtg gca	agt atc tcc cac cag	gaa caa ctg agt tct gtg	2543
Ser Gly Ser Val Ala	Ser Ile Ser His Gln	Glu Gln Leu Ser Ser Val	
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Pro Asp Leu Thr His	Gly Glu Glu Asp Ile	Gly Lys Arg Gly Asn Asn	
689	694	699	704
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Arg Asn Gly Gln Leu	Leu Glu Asn Pro Arg	Phe Gly Lys Met Pro Leu	
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Glu Leu Val Arg Lys	Pro Ile Ser Gln Ser	Gln Ile Ser Glu Phe Ser	
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Phe Leu Gly Ser Asn	Trp Asp Ser Phe Gln	Gly Met Val Thr Ser Phe	
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cca agt ggg gag gcc	acc cct cgg cgg ctg	ctt tcc tat ggc tgt tgt	2783
Pro Ser Gly Glu Ala	Thr Pro Arg Arg Leu	Leu Ser Tyr Gly Cys Cys	
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Ser Lys Arg Pro Asn	Ser Lys Gln Met Arg	Ala Thr Gly Pro Cys Phe	
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Gly Gly Gln Trp Ala	Gln Arg Glu Gly Val	Lys Ser Pro Val Cys Ser	
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agt cat tcc aat gga	cat tgt act ggc cca	gga gga aag aac cag atg	2927
Ser His Ser Asn Gly	His Cys Thr Gly Pro	Gly Gly Lys Asn Gln Met	
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Trp Leu Ser Ser His	Pro Lys Gln Val Ser	Ser Thr Lys Pro Val Pro	

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Leu Asn Cys Pro Ser Pro Val Pro Pro Leu Tyr Leu Asp Asp Asp Gly				
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ctc ccc ttt ccc acg gat gtg atc cag cat agg tta cgg caa atc gaa				3071
Leu Pro Phe Pro Thr Asp Val Ile Gln His Arg Leu Arg Gln Ile Glu				
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Ala Gly Tyr Lys Gln Glu Val Glu Gln Leu Arg Arg Gln Val Arg Glu				
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Pro Pro Met Asp Tyr Glu Asp Asp Phe Thr Cys Leu Lys Glu Ser Asp				
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Gly Ser Asp Thr Glu Asp Phe Gly Ser Asp His Ser Glu Asp Cys Leu				
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Ser Glu Ala Ser Trp Glu Pro Val Asp Lys Lys Glu Thr Glu Val Thr				
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Arg Trp Val Pro Asp His Met Ala Ser His Cys Tyr Asn Cys Asp Cys				
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Gln Leu Tyr Asp Pro Val Leu Val Cys Asn Ser Cys Tyr Glu His Ile				
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Gln Val Ser Arg Ala Arg Glu Leu Met Ser Gln Gln Leu Lys Lys Pro				
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Met Thr Phe Phe Ser Ser Val Ala Asp Phe Ile Gly Leu Asp  
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Pro Arg Ile Ala Ala Trp Leu Ile Asp Pro Ser Ser Asp Ala Thr Pro Ser  
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Phe Glu Asp Leu Val Glu Lys Tyr Cys Glu Lys Ser Ile Thr Val Lys  
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Ser Lys Leu Lys Asp Tyr Gly Leu Trp Gln Leu Phe Arg Thr Leu Glu  
79 84 89 94  
ctt cct ctg ata cca att ttg gca gtg atg gaa agc cat gcc att cag 396  
Leu Pro Leu Ile Pro Ile Leu Ala Val Met Glu Ser His Ala Ile Gln  
95 100 105 110  
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Val Asn Lys Glu Glu Met Glu Lys Thr Ser Ala Leu Leu Gly Ala Arg



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Leu Lys Glu Leu Glu	Gln Glu Ala His Phe	Val Ala Gly Glu Arg	Phe	
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Lys Leu His Leu Leu	Ser Gln Arg Asn Ser	Leu Pro Arg Thr Gly	Leu	
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Gln Lys Tyr Pro Ser	Thr Val Ser Glu Ala	Leu Asn Ala Leu Arg	Asp	
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Leu His Pro Leu Pro	Lys Ile Ile Leu Glu	Tyr Arg Gln Val His	Lys	
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Ile Lys Ser Thr Phe	Val Asp Gly Leu Leu	Ala Cys Met Lys Lys	Gly	
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Ser Ile Ser Ser Thr	Trp Asn Gln Thr Gly	Thr Val Thr Gly Arg	Leu	
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Ser Ala Lys His Pro	Asn Ile Gln Gly Ile	Ser Lys His Pro Ile	Gln	
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Ile Ser Pro Arg Ala	Met Phe Val Ser Ser	Lys Gly His Thr Phe	Leu	
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Ala Ala Asp Phe Ser	Gln Ile Glu Leu Arg	Ile Leu Thr His Leu	Ser	
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Val Phe Ser Thr Leu	Thr Ser Gln Trp Lys	Asp Val Pro Val Glu	Gln	
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Val Thr His Ala Asp	Arg Glu Gln Thr Lys	Lys Val Val Tyr Ala	Val	
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Val Tyr Gly Ala Gly Lys Glu Arg Leu Ala Ala Cys Leu Gly Val Pro	
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Ile His Val Phe Thr Ala Val Ala Ala Ser His Thr Leu Thr Ala Arg	
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His Leu Val Pro Leu Gln Glu Ala Trp Gly Pro Pro Pro Gly Pro Cys	
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Ser Thr Gln Pro Pro Pro Leu His Phe Ser Pro Ser Phe Cys Leu *	
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His Thr Thr Val Thr Ala Leu Lys Asp Val Pro Phe Ser Leu Cys Gln	
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Asp Val Ala Leu Lys Arg Ala Ala Glu Met Glu Leu Gln Ala Lys Leu	
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Ser Lys Ala Val Leu Val Thr Gly Cys Asp Ser Gly Phe Gly Phe Ser
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Leu Ala Lys His Leu His Ser Lys Gly Phe Leu Val Phe Ala Gly Cys
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Leu Met Lys Asp Lys Gly His Asp Gly Val Lys Glu Leu Asp Ser Leu
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Asn Ser Asp Arg Leu Arg Thr Val Gln Leu Asn Val Cys Ser Ser Glu
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Glu Val Glu Lys Val Val Glu Ile Val Arg Ser Ser Leu Lys Asp Pro
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Pro Tyr Thr Arg Tyr His Pro Met Asp Tyr Tyr Trp Trp Leu Arg Met	
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Gln Ile Met Thr His Leu Pro Gly Ala Ile Ser Asp Met Ile Tyr Ile	
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Arg *	
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Gln Lys Leu Lys Glu	Arg Val Glu Ala Gln	Glu Asn Lys Leu Lys Lys		
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Ile Arg Ala Met Arg	Gly Gln Val Asp Tyr	Ser Lys Ile Met Asn Gly		
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Lys Ile Gln Ala Cys	Glu Lys Val Phe Leu	Asn Arg Val Asn Gly Thr		
321	326	331	336	



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Gln Pro Val Pro Phe Ser Ala Leu Gly Pro Thr Glu Lys Pro Gly Ile	
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Ser Val Pro Pro Ser Pro Thr Tyr Pro Pro Ala Gly Pro Pro Ala Phe	
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Lys Ser Val Lys Ala	Val Tyr Gly Lys Pro	Val Leu Pro Ser Gly Ser	
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Gln Asp Gly Pro Ala	Ala Pro Ala Asp Gly	Ser Thr Val Glu Ser Leu	
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Pro Ser Gln Asp Phe	Met Gly Thr Leu Ala	Asp Val Asp Asn Gly Asn	
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Thr Asn Ala Asn Gly	Asn Leu Glu Glu Leu	Pro Pro Ala Gln Pro Thr	
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Trp Glu Asn Pro Asp Ser Ala Gln Ala Asn Gly Ile Asp Ser Val Leu	
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Ser Arg Ala Glu Ile Ala Ser Cys Ser Tyr Glu Ala Arg Gln Leu Gly	
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Ile Lys Asn Gly Met Phe Phe Gly His Ala Lys Gln Leu Cys Pro Asn	
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Leu Gln Ala Val Pro Tyr Asp Phe His Ala Tyr Lys Glu Val Ala Gln	
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Thr Leu Tyr Glu Thr Leu Ala Ser Tyr Thr His Asn Ile Glu Ala Val	
132 137 142 147	
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Ser Cys Asp Glu Ala Leu Val Asp Ile Thr Glu Ile Leu Ala Glu Thr	
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Lys Leu Thr Pro Asp Glu Phe Ala Asn Ala Val Arg Met Glu Ile Lys	
164 169 174 179	
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Asp Gln Thr Lys Cys Ala Ala Ser Val Gly Ile Gly Ser Asn Ile Leu	
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Leu Ala Arg Met Ala Thr Arg Lys Ala Lys Pro Asp Gly Gln Tyr His	
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Glu Ala Thr Gly Met Lys Gly Lys Arg Leu Thr Leu Lys Ile Met Val	

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Cys Thr Phe Leu Pro	Pro Phe Pro Ala His	Leu Pro Thr Ser Pro Asp		
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Val Ser Val Gln Ser	Arg Leu Asn Leu Ser	Ile Glu Val Pro Ser Pro		
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Ser Gln Leu Asp Gln	Ser Val Leu Glu Ala	Leu Pro Pro Asp Leu Arg		
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Glu Gln Val Glu Gln	Val Cys Ala Val Gln	Gln Ala Glu Ser His Gly		
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Asp Lys Lys Lys Glu	Pro Val Asn Gly Cys	Asn Thr Gly Ile Leu Pro		
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Lys His Asp Glu Trp Leu Ser Cys Ala Pro Lys Thr Arg Pro Gln Asn	
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Gly Tyr Leu Trp Lys Lys Arg Lys Asp Gly Lys Thr Thr Arg Glu Asp	
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His Met Lys Leu Lys Val Gln Gly Met Glu Cys Leu Tyr Gly Cys Tyr	
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Val His Ser Ser Ile Val Pro Thr Phe His Arg Arg Cys Tyr Trp Leu	
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Leu Gln Asn Pro Asp Ile Val Leu Val His Tyr Leu Asn Val Pro Ala	
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Leu Glu Asp Cys Gly Lys Gly Cys Ser Pro Ile Phe Cys Ser Ile Ser	
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His Pro Thr Lys Pro Ala Pro Arg Thr His Ala Cys Leu Cys Ser Gly	
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Gly Leu Gly Ser Gly Ser Leu Thr His Lys Cys Ser Ser Thr Lys His	
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Ile Pro His Pro His Pro Pro Glu Pro Pro Pro Leu Ile Ala Pro Leu	
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Val	Gly	Thr	Glu	Pro	Ser	Ala	Pro	Pro	Ala	Pro	Pro	Ser	Pro	Ala	Phe		
360					365					370					375		
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Asp	Pro	Asp	Arg	Phe	Leu	Asn	Ser	Pro	Gln	Arg	Gly	Gln	Thr	Tyr	Gly		
376					381					386					391		
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Gly	Gly	Gln	Gly	Val	Ser	Pro	Asp	Phe	Pro	Glu	Ala	Glu	Ala	Ala	His		
392					397					402					407		
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Thr	Pro	Cys	Ser	Ala	Leu	Glu	Pro	Ala	Ala	Ala	Leu	Glu	Pro	Gln	Ala		
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Leu	Phe	Gly	Gly	Pro	Val	Gly	Ala	Ser	Glu	Leu	Glu	Pro	Phe	Ser	Leu		
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Ser	Ser	Phe	Pro	Asp	Leu	Met	Gly	Glu	Leu	Ile	Ser	Asp	Glu	Ala	Pro		

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Thr Asp Phe Ser Pro Glu Trp Ser Tyr Pro Glu Gly Gly Val Lys Val				
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Arg Cys Tyr Cys Pro Ala His Glu Val Gly Leu Val Ser Leu Gln Val				
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Ala Gly Arg Glu Gly Pro Leu Ser Ala Ser Val Leu Phe Glu Tyr Arg				
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680	685	690	695	
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Thr Trp Lys Gly Pro Glu Arg Leu Ala His Gly Ser Pro Phe Arg Gly				
696	701	706	711	
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Met Ser Leu Leu His Leu Ala Ala Ala Gln Gly Tyr Ala Arg Leu Ile				
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Ser Met Arg Glu Arg Thr Gly Ala Val Gly Leu Ser Glu Thr Met Ser	
968 973 978 983	
tgg ctg gcc agc tac ctg gag aat gtg gac cat ttc ccc agc tca acc	3147
Trp Leu Ala Ser Tyr Leu Glu Asn Val Asp His Phe Pro Ser Ser Thr	
984 989 994 999	
cct ccc agc gaa ctg ccc ttt gag cga ggt cgc ctg gct gtc cct tca	3195
Pro Pro Ser Glu Leu Pro Phe Glu Arg Gly Arg Leu Ala Val Pro Ser	
1000 1005 1010 1015	
gca ccc tcc tgg gca gag ttt ctc tct gca tcc acc agt ggc aag atg	3243
Ala Pro Ser Trp Ala Glu Phe Leu Ser Ala Ser Thr Ser Gly Lys Met	
1016 1021 1026 1031	
gaa agt gat ttt gcc ctg ctg aca cta tca gat cac gag cag cgg gaa	3291
Glu Ser Asp Phe Ala Leu Leu Thr Leu Ser Asp His Glu Gln Arg Glu	
1032 1037 1042 1047	
ctg tat gag gct gcc cga gtc atc cag acg gcc ttc cga aag tac aag	3339
Leu Tyr Glu Ala Ala Arg Val Ile Gln Thr Ala Phe Arg Lys Tyr Lys	
1048 1053 1058 1063	
ggc cgg cgg ctg aag gag cag cag gag gta gca gca gct gta atc cag	3387
Gly Arg Arg Leu Lys Glu Gln Gln Glu Val Ala Ala Val Ile Gln	
1064 1069 1074 1079	
cgc tgt tac cgg aag tac aag cag ctg acc tgg att gca ctt aag ttt	3435
Arg Cys Tyr Arg Lys Tyr Lys Gln Leu Thr Trp Ile Ala Leu Lys Phe	
1080 1085 1090 1095	
gca ctc tat aag aag atg acc cag gcg gcc atc ctg atc cag agc aag	3483
Ala Leu Tyr Lys Lys Met Thr Gln Ala Ala Ile Leu Ile Gln Ser Lys	
1096 1101 1106 1111	
ttc cga agc tac tat gaa cag aag cga ttt cag cag agc cgc cga gcg	3531
Phe Arg Ser Tyr Tyr Glu Gln Lys Arg Phe Gln Gln Ser Arg Arg Ala	
1112 1117 1122 1127	
gct gtg ctc atc cag cag cac tac cgc tcc tac cgc cgc agg ccc ggc	3579
Ala Val Leu Ile Gln Gln His Tyr Arg Ser Tyr Arg Arg Arg Pro Gly	
1128 1133 1138 1143	
cct ccc cac cgg act tcg gcc acc ctg cct gcc cgc aac aaa ggc tcc	3627
Pro Pro His Arg Thr Ser Ala Thr Leu Pro Ala Arg Asn Lys Gly Ser	
1144 1149 1154 1159	
ttt ctc acc aag aag cag gac cag gca gcc cgg aag atc atg aga ttc	3675
Phe Leu Thr Lys Lys Gln Asp Gln Ala Ala Arg Lys Ile Met Arg Phe	
1160 1165 1170 1175	
ctg cgg cgc tgc cga cac agg atg agg gaa ctg aag cag aac cag gag	3723
Leu Arg Arg Cys Arg His Arg Met Arg Glu Leu Lys Gln Asn Gln Glu	
1176 1181 1186 1191	
ctg gaa ggg ctt ccc cag ccg gga ctg gcc aca tga cctg gccaccgcct	3773

Leu Glu Gly Leu Pro Gln Pro Gly Leu Ala Thr \*  
 1192 1197 1202

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 ggggagcccc tgtcggcagc tttcctgttc acctttgttg gagccctctg taggcctcct 3893  
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 atctatttaa ggcgcgcggg ggagggtgc acggccgggc ttgtggttct ctagcgcggc 4433  
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 ttttccctc tctttttctg ctctctctc tctcagtcct tctttttcta tctgctctt 180  
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 aacaatcggg cactttgaga actaactgga gacagtcttg tagggaagat ctgtatggaa 300  
 ttatctgctt ttatggtgaa cttggcattt gtgaatggga atcttgttca caatattaat 360  
 tgctagcaaa aacaagaaaa agaacacagg agtaaaacgt ggatttttct gaatacgcac 420  
 tgtgatgacc agcaattacc ttaccgacta atatccagag gagaataatt tggaagactg 480

ttgtgggggaa cagcctttaa gagctggaag	atg aaa gct ccg att cca cac	531
	Met Lys Ala Pro Ile Pro His	
	1 5	
ttg att ctc tta tac gct act ttt act cag agt ttg aag gtt gtg acc		579
Leu Ile Leu Leu Tyr Ala Thr Phe Thr Gln Ser Leu Lys Val Val Thr		
8 13 18 23		
aaa aga ggc tcc gcc gat gga tgc act gac tgg tct atc gat atc aag		627
Lys Arg Gly Ser Ala Asp Gly Cys Thr Asp Trp Ser Ile Asp Ile Lys		
24 29 34 39		
aaa tat caa gtt ttg gtg gga gag cct gtt cga atc aaa tgt gca ctc		675
Lys Tyr Gln Val Leu Val Gly Glu Pro Val Arg Ile Lys Cys Ala Leu		
40 45 50 55		
ttt tat ggt tat atc aga aca aat tac tcc ctt gcc caa agt gct gga		723
Phe Tyr Gly Tyr Ile Arg Thr Asn Tyr Ser Leu Ala Gln Ser Ala Gly		
56 61 66 71		
ctc agt ttg atg tgg tac aaa agt tct ggt cct gga gac ttt gaa gag		771
Leu Ser Leu Met Trp Tyr Lys Ser Ser Gly Pro Gly Asp Phe Glu Glu		
72 77 82 87		
cca ata gcc ttt gac gga agt aga atg agc aaa gaa gaa gac tcc att		819
Pro Ile Ala Phe Asp Gly Ser Arg Met Ser Lys Glu Glu Asp Ser Ile		
88 93 98 103		
tgg ttc cgg cca aca ttg cta cag gac agt ggt ctc tac gcc tgt gtc		867
Trp Phe Arg Pro Thr Leu Leu Gln Asp Ser Gly Leu Tyr Ala Cys Val		
104 109 114 119		
atc aga aac tcc act tac tgt atg aaa gta tcc atc tca ctg aca gtg		915
Ile Arg Asn Ser Thr Tyr Cys Met Lys Val Ser Ile Ser Leu Thr Val		
120 125 130 135		
ggt gaa aat gac act gga ctc tgc tat aat tcc aag atg aag tat ttt		963
Gly Glu Asn Asp Thr Gly Leu Cys Tyr Asn Ser Lys Met Lys Tyr Phe		
136 141 146 151		
gaa aaa gct gaa ctt agc aaa agc aag gaa att tca tgc cgt gac ata		1011
Glu Lys Ala Glu Leu Ser Lys Ser Lys Glu Ile Ser Cys Arg Asp Ile		
152 157 162 167		
gag gat ttt cta ctg cca acc aga gaa cct gaa atc ctt tgg tac aag		1059
Glu Asp Phe Leu Leu Pro Thr Arg Glu Pro Glu Ile Leu Trp Tyr Lys		
168 173 178 183		
gaa tgc agg aca aaa aca tgg agg cca agt att gta ttc aaa aga gat		1107
Glu Cys Arg Thr Lys Thr Trp Arg Pro Ser Ile Val Phe Lys Arg Asp		
184 189 194 199		
act ctg ctt ata aga gaa gtc aga gaa gat gac att gga aat tat acc		1155
Thr Leu Leu Ile Arg Glu Val Arg Glu Asp Asp Ile Gly Asn Tyr Thr		
200 205 210 215		



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Cys Glu Leu Lys Tyr Gly Gly Phe Val Val Arg Arg Thr Thr Glu Leu	
216 221 226 231	
act gtt aca gcc cct ctg act gat aag cca ccc aag ctt ttg tat cct	1251
Thr Val Thr Ala Pro Leu Thr Asp Lys Pro Pro Lys Leu Leu Tyr Pro	
232 237 242 247	
atg gaa agt aaa ctg aca att cag gag acc cag ctg ggt gac tct gct	1299
Met Glu Ser Lys Leu Thr Ile Gln Glu Thr Gln Leu Gly Asp Ser Ala	
248 253 258 263	
aat cta acc tgc aga gct ttc ttt ggg tac agc gga gat gtc agt cct	1347
Asn Leu Thr Cys Arg Ala Phe Phe Gly Tyr Ser Gly Asp Val Ser Pro	
264 269 274 279	
tta att tac tgg atg aaa gga gaa aaa ttt att gaa gat ctg gat gaa	1395
Leu Ile Tyr Trp Met Lys Gly Glu Lys Phe Ile Glu Asp Leu Asp Glu	
280 285 290 295	
aat cga gtt tgg gaa agt gac att aga att ctt aag gag cat ctt ggg	1443
Asn Arg Val Trp Glu Ser Asp Ile Arg Ile Leu Lys Glu His Leu Gly	
296 301 306 311	
gaa cag gaa gtt tcc atc tca tta att gtg gac tct gtg gaa gaa ggt	1491
Glu Gln Glu Val Ser Ile Ser Leu Ile Val Asp Ser Val Glu Glu Gly	
312 317 322 327	
gac ttg gga aat tac tcc tgt tat gtt gaa aat gga aat gga cgt cga	1539
Asp Leu Gly Asn Tyr Ser Cys Tyr Val Glu Asn Gly Asn Gly Arg Arg	
328 333 338 343	
cac gcc agc gtt ctc ctt cat aaa cga gag cta atg tac aca gtg gaa	1587
His Ala Ser Val Leu Leu His Lys Arg Glu Leu Met Tyr Thr Val Glu	
344 349 354 359	
ctt gct gga ggc ctt ggt gct ata ctc ttg ctg ctt gta tgt ttg gtg	1635
Leu Ala Gly Gly Leu Gly Ala Ile Leu Leu Leu Leu Val Cys Leu Val	
360 365 370 375	
acc atc tac aag tgt tac aag ata gaa atc atg ctc ttc tac agg aat	1683
Thr Ile Tyr Lys Cys Tyr Lys Ile Glu Ile Met Leu Phe Tyr Arg Asn	
376 381 386 391	
cat ttt gga gct gaa gag ctc gat gga gac aat aaa gat tat gat gca	1731
His Phe Gly Ala Glu Glu Leu Asp Gly Asp Asn Lys Asp Tyr Asp Ala	
392 397 402 407	
tac tta tca tac acc aaa gtg gat cct gac cag tgg aat caa gag act	1779
Tyr Leu Ser Tyr Thr Lys Val Asp Pro Asp Gln Trp Asn Gln Glu Thr	
408 413 418 423	
ggg gaa gaa gaa cgt ttt gcc ctt gaa atc cta cct gat atg ctt gaa	1827
Gly Glu Glu Glu Arg Phe Ala Leu Glu Ile Leu Pro Asp Met Leu Glu	
424 429 434 439	
aag cat tat gga tat aag ttg ttt ata cca gat aga gat tta atc cca	1875

Lys His Tyr Gly Tyr Lys Leu Phe Ile Pro Asp Arg Asp Leu Ile Pro	
440 445 450 455	
act gga aca tac att gaa gat gtg gca aga tgt gta gat caa agc aag	1923
Thr Gly Thr Tyr Ile Glu Asp Val Ala Arg Cys Val Asp Gln Ser Lys	
456 461 466 471	
cgg ctg att att gtc atg acc cca aat tac gta gtt aga agg ggc tgg	1971
Arg Leu Ile Ile Val Met Thr Pro Asn Tyr Val Val Arg Arg Gly Trp	
472 477 482 487	
agc atc ttt gag ctg gaa acc aga ctt cga aat atg ctt gtg act gga	2019
Ser Ile Phe Glu Leu Glu Thr Arg Leu Arg Asn Met Leu Val Thr Gly	
488 493 498 503	
gaa att aaa gtg att cta att gaa tgc agt gaa ctg aga gga att atg	2067
Glu Ile Lys Val Ile Leu Ile Glu Cys Ser Glu Leu Arg Gly Ile Met	
504 509 514 519	
aac tac cag gag gtg gag gcc ctg aag cac acc atc aag ctc ctg acg	2115
Asn Tyr Gln Glu Val Glu Ala Leu Lys His Thr Ile Lys Leu Leu Thr	
520 525 530 535	
gtc att aaa tgg cat gga cca aaa tgc aac aag ttg aac tcc aag ttc	2163
Val Ile Lys Trp His Gly Pro Lys Cys Asn Lys Leu Asn Ser Lys Phe	
536 541 546 551	
tgg aaa cgt tta cag tat gaa atg cct ttt aag agg ata gaa ccc att	2211
Trp Lys Arg Leu Gln Tyr Glu Met Pro Phe Lys Arg Ile Glu Pro Ile	
552 557 562 567	
aca cat gag cag gct tta gat gtc agt gag caa ggg cct ttt ggg gag	2259
Thr His Glu Gln Ala Leu Asp Val Ser Glu Gln Gly Pro Phe Gly Glu	
568 573 578 583	
ctg cag act gtc tgc gcc att tcc atg gcc gcg gcc acc tcc aca gct	2307
Leu Gln Thr Val Ser Ala Ile Ser Met Ala Ala Ala Thr Ser Thr Ala	
584 589 594 599	
cta gcc act gcc cat cca gat ctc cgt tct acc ttt cac aac acg tac	2355
Leu Ala Thr Ala His Pro Asp Leu Arg Ser Thr Phe His Asn Thr Tyr	
600 605 610 615	
cat tca caa atg cgt cag aaa cac tac tac cga agc tat gag tac gac	2403
His Ser Gln Met Arg Gln Lys His Tyr Tyr Arg Ser Tyr Glu Tyr Asp	
616 621 626 631	
gta cct cct acc ggc acc ctg cct ctt acc tcc ata ggc aat cag cat	2451
Val Pro Pro Thr Gly Thr Leu Pro Leu Thr Ser Ile Gly Asn Gln His	
632 637 642 647	
acc tac tgt aac atc cct atg aca ctc atc aac ggg cag cgg cca cag	2499
Thr Tyr Cys Asn Ile Pro Met Thr Leu Ile Asn Gly Gln Arg Pro Gln	
648 653 658 663	
aca aaa tcg agc agg gag cag aat cca gat gag gcc cac aca aac agt	2547
Thr Lys Ser Ser Arg Glu Gln Asn Pro Asp Glu Ala His Thr Asn Ser	

664	669	674	679	
gcc atc ctg ccg ctg ttg cca agg gag acc agt ata tcc agt gtg ata				2595
Ala Ile Leu Pro Leu Leu Pro Arg Glu Thr Ser Ile Ser Ser Val Ile				
680	685	690	695	

tgg tga cagaaaagca agggacatcc cgtccctggg aggttgagtg gaatctgcag	2651
Trp *	
696	

tccagtgcct ggaactaaat cctcgactgc tgctgtttaa aaacatgcat tagaatctct	2711
agaacacgag gaaaaacagg gtcttgtaga tatgtttttt ggaatttctt tgtagcatca	2771
gtgtcctcct gttttaccat gtcttttacc attacatttt ttgactttgt tttatatgtc	2831
gttggaattt gtaaatttac atttttttta aagaagagac tgatgtgtag atagaaaacc	2891
ctttttttgc ttcattagtt tagtttttaga atgggttttt attttatttc ctttttttaa	2951
attttacttt gcttttaaca tttccttggg gtgcttgagc aaatctatcc gatgggacaa	3011
ggagcaccgg attctttctc gggttctgcc tagcatcaac tggggccacgt cggccttcag	3071
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cagaaaaaag aatttgggtt ttgagctttt ttaaaaaaaa aaagacaaac actttccttg	180
actttgagaa ataatttaag tcaaagaatc tgctctatgc taaccaagag atagagcaca	240
gcaaagatct gccagcccca ggcctctacc taggggcctg gaaattcaag tattcttatt	300
ggggggaggcc atttgtttct gattagaagc tgtctaaacc tcctactcct caactcaaag	360
gaaaacacag agcatacc atg gcc aag aaa gtt gca gtg att gga gct ggt	411
Met Ala Lys Lys Val Ala Val Ile Gly Ala Gly	
1 5	
gtg agt ggc ctg tcc tcc atc aaa tgc tgt gtg gat gag gac ctg gag	459
Val Ser Gly Leu Ser Ser Ile Lys Cys Cys Val Asp Glu Asp Leu Glu	

12	17	22	27	
ccc acc tgc ttt gag aga agt gat gac att ggg gga tta tgg aag ttt				507
Pro Thr Cys Phe Glu Arg Ser Asp Asp Ile Gly Gly Leu Trp Lys Phe				
28	33	38	43	
act gaa tct tcc aaa gat ggg atg acc agg gtc tat aag tca tta gtg				555
Thr Glu Ser Ser Lys Asp Gly Met Thr Arg Val Tyr Lys Ser Leu Val				
44	49	54	59	
aca aat gtc tgt aag gaa atg tca tgt tac agt gac ttc cct ttc cac				603
Thr Asn Val Cys Lys Glu Met Ser Cys Tyr Ser Asp Phe Pro Phe His				
60	65	70	75	
gaa gat tat cct aat ttc atg aac cat gaa aaa ttt tgg gac tat ctc				651
Glu Asp Tyr Pro Asn Phe Met Asn His Glu Lys Phe Trp Asp Tyr Leu				
76	81	86	91	
caa gaa ttt gct gag cac ttt gac ctc ctg aaa tac att cag ttt aag				699
Gln Glu Phe Ala Glu His Phe Asp Leu Leu Lys Tyr Ile Gln Phe Lys				
92	97	102	107	
acc act gtg tgc agc ata acg aag cgt cca gac ttc tcc gaa act ggt				747
Thr Thr Val Cys Ser Ile Thr Lys Arg Pro Asp Phe Ser Glu Thr Gly				
108	113	118	123	
cag tgg gat gtt gtc aca gag aca gag ggc aag caa aat aga gct gtc				795
Gln Trp Asp Val Val Thr Glu Thr Glu Gly Lys Gln Asn Arg Ala Val				
124	129	134	139	
ttt gat gct gtt atg gtt tgc act gga cat ttc ctg aat ccc cat tta				843
Phe Asp Ala Val Met Val Cys Thr Gly His Phe Leu Asn Pro His Leu				
140	145	150	155	
cct ttg gaa gcc ttt cct gga att cat aag ttt aaa ggt cag atc ctg				891
Pro Leu Glu Ala Phe Pro Gly Ile His Lys Phe Lys Gly Gln Ile Leu				
156	161	166	171	
cat agt caa gag tac aag atc cca gaa ggc ttt cag ggc aaa cgc gtc				939
His Ser Gln Glu Tyr Lys Ile Pro Glu Gly Phe Gln Gly Lys Arg Val				
172	177	182	187	
ttg gtg att ggt ctt ggg aac act gga gga gac att gct gtg gaa ctc				987
Leu Val Ile Gly Leu Gly Asn Thr Gly Gly Asp Ile Ala Val Glu Leu				
188	193	198	203	
agt cga acg gca gct cag gta ctt ctc agt act aga act ggt acc tgg				1035
Ser Arg Thr Ala Ala Gln Val Leu Leu Ser Thr Arg Thr Gly Thr Trp				
204	209	214	219	
gtt ctt ggg cgc tct tca gat tgg ggc tat cct tat aat atg atg gtt				1083
Val Leu Gly Arg Ser Ser Asp Trp Gly Tyr Pro Tyr Asn Met Met Val				
220	225	230	235	
aca aga aga tgc tgt agt ttt att gca caa gtt ctg cct tca cgt ttt				1131
Thr Arg Arg Cys Cys Ser Phe Ile Ala Gln Val Leu Pro Ser Arg Phe				
236	241	246	251	

cta aac tgg att caa gaa agg aag ttg aat aag aga ttt aat cat gag	1179
Leu Asn Trp Ile Gln Glu Arg Lys Leu Asn Lys Arg Phe Asn His Glu	
252 257 262 267	
gat tat gga tta agt att acc aaa ggg aaa aaa gca aaa ttc att gtg	1227
Asp Tyr Gly Leu Ser Ile Thr Lys Gly Lys Lys Ala Lys Phe Ile Val	
268 273 278 283	
aat gat gag ctg cca aac tgt atc ctc tgt ggg gca atc act atg aaa	1275
Asn Asp Glu Leu Pro Asn Cys Ile Leu Cys Gly Ala Ile Thr Met Lys	
284 289 294 299	
acc agc gtg att gaa ttt aca gaa acc tct gct gtc ttt gaa gat ggg	1323
Thr Ser Val Ile Glu Phe Thr Glu Thr Ser Ala Val Phe Glu Asp Gly	
300 305 310 315	
aca gtg gaa gaa aac att gat gtt gtg atc ttc act aca gga tat aca	1371
Thr Val Glu Glu Asn Ile Asp Val Val Ile Phe Thr Thr Gly Tyr Thr	
316 321 326 331	
ttt tct ttt cca ttt ttt gaa gaa cct ctt aaa agc ctc tgt aca aag	1419
Phe Ser Phe Pro Phe Phe Glu Glu Pro Leu Lys Ser Leu Cys Thr Lys	
332 337 342 347	
aag ata ttt cta tac aag caa gtc ttt ccc tta aac cta gag aga gcg	1467
Lys Ile Phe Leu Tyr Lys Gln Val Phe Pro Leu Asn Leu Glu Arg Ala	
348 353 358 363	
aca tta gcc atc atc ggc ctt atc ggc ctt aaa gga tcc atc tta tca	1515
Thr Leu Ala Ile Ile Gly Leu Ile Gly Leu Lys Gly Ser Ile Leu Ser	
364 369 374 379	
ggc aca gag ctc caa gca cga tgg gtc aca aga gta ttc aaa gga ctc	1563
Gly Thr Glu Leu Gln Ala Arg Trp Val Thr Arg Val Phe Lys Gly Leu	
380 385 390 395	
tgt aag ata cct cca tcc caa aaa ttg atg atg gag gct act gaa aag	1611
Cys Lys Ile Pro Pro Ser Gln Lys Leu Met Met Glu Ala Thr Glu Lys	
396 401 406 411	
gaa cag ctc att aaa agg gga gtg ttt aaa gac acc agc aaa gac aaa	1659
Glu Gln Leu Ile Lys Arg Gly Val Phe Lys Asp Thr Ser Lys Asp Lys	
412 417 422 427	
ttt gac tac att gcc tac atg gat gat atc gct gcc tgc ata ggc aca	1707
Phe Asp Tyr Ile Ala Tyr Met Asp Asp Ile Ala Ala Cys Ile Gly Thr	
428 433 438 443	
aag ccc agc atc cca ctt ctg ttc ctc aag gat ccc aga cta gct tgg	1755
Lys Pro Ser Ile Pro Leu Leu Phe Leu Lys Asp Pro Arg Leu Ala Trp	
444 449 454 459	
gaa gtt ttc ttt gga cca tgt act cct tat cag tac cgc ctc atg ggc	1803
Glu Val Phe Phe Gly Pro Cys Thr Pro Tyr Gln Tyr Arg Leu Met Gly	
460 465 470 475	

cct gga aaa tgg gat	gga gcc aga aat gcc atc ctg acc cag tgg gac	1851
Pro Gly Lys Trp Asp	Gly Ala Arg Asn Ala Ile Leu Thr Gln Trp Asp	
476	481 486 491	

aga aca ttg aaa cct tta aaa act cga att gtc cct gat tcc tcc aag	1899
Arg Thr Leu Lys Pro Leu Lys Thr Arg Ile Val Pro Asp Ser Ser Lys	
492 497 502 507	

cct gcc tcc atg tca cat tat tta aaa gcc tgg ggg gca cct gtc cta	1947
Pro Ala Ser Met Ser His Tyr Leu Lys Ala Trp Gly Ala Pro Val Leu	
508 513 518 523	

ctt gcc tct ctt cta ctt atc tgt aaa tct tca ctt ttc ttg aaa ttg	1995
Leu Ala Ser Leu Leu Leu Ile Cys Lys Ser Ser Leu Phe Leu Lys Leu	
524 529 534 539	

gtg aga gat aaa cta cag gac aga atg tcc cct tac cta gta agt ctt	2043
Val Arg Asp Lys Leu Gln Asp Arg Met Ser Pro Tyr Leu Val Ser Leu	
540 545 550 555	

tgg cga gga tga acc tgattgttac aagggttaca ccaagtcattg ctaattctat	2098
Trp Arg Gly *	
556	

ctccaagtat cttgtgcac cctcctctgc tctccatcat aactgctatt agccaaattc	2158
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agggccagtc atctcctatc tgaattattg tattatcttc ttctttgttt tcagtaccct	2218
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ctttcttgcc accctttcca atgcattctc taccctgcta cctcagtgat tattctaaaa	2278
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taaatatata tgatatgggt aaaaaaaaaa aaaa	2312
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	atg
	Met
	1

gca ggg att tca cag aat gcc aag acc gga gac ctc cct gcc ttt ggg	163
Ala Gly Ile Ser Gln Asn Ala Lys Thr Gly Asp Leu Pro Ala Phe Gly	
2 7 12 17	

gaa tgt gtg ggg att gca tcc aag gct ctc tgt ggg ctg aca gag gct	211
Glu Cys Val Gly Ile Ala Ser Lys Ala Leu Cys Gly Leu Thr Glu Ala	

18	23	28	33	
gca gcc cag gct gca tac ttg gtt ggc atc ttt gat cca aac agc cag				259
Ala Ala Gln Ala Ala Tyr Leu Val Gly Ile Phe Asp Pro Asn Ser Gln				
34	39	44	49	
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Ala Gly His Gln Gly Leu Val Asp Pro Ile Gln Phe Ala Arg Ala Asn				
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cag gcc atc cag atg gca tgc cag aac ttg gtg gac cct ggc agc agc				355
Gln Ala Ile Gln Met Ala Cys Gln Asn Leu Val Asp Pro Gly Ser Ser				
66	71	76	81	
cca tca cag gtc ctg tca gcc gcc aca att gtt gcc aag cac acg tca				403
Pro Ser Gln Val Leu Ser Ala Ala Thr Ile Val Ala Lys His Thr Ser				
82	87	92	97	
gcc ttg tgt aat gcc tgc cgc atc gcc tca tcc aag acg gcc aac cca				451
Ala Leu Cys Asn Ala Cys Arg Ile Ala Ser Ser Lys Thr Ala Asn Pro				
98	103	108	113	
gta gcc aag agg cac ttc gtc cag tgc gcc aag gaa gtc gcc aac agc				499
Val Ala Lys Arg His Phe Val Gln Ser Ala Lys Glu Val Ala Asn Ser				
114	119	124	129	
act gcc aac ctg gtg aag acc atc aag gcc ctg gat ggg gat ttc tct				547
Thr Ala Asn Leu Val Lys Thr Ile Lys Ala Leu Asp Gly Asp Phe Ser				
130	135	140	145	
gaa gac aac cgc aat aag tgt cgc atc gcc acc gca ccc ttg att gaa				595
Glu Asp Asn Arg Asn Lys Cys Arg Ile Ala Thr Ala Pro Leu Ile Glu				
146	151	156	161	
gct gtg gag aac ctg aca gcg ttc gcc tca aac cct gag ttt gtc agc				643
Ala Val Glu Asn Leu Thr Ala Phe Ala Ser Asn Pro Glu Phe Val Ser				
162	167	172	177	
att cct gcc cag atc agc tcc gag ggt tcc cag gca cag gaa cca atc				691
Ile Pro Ala Gln Ile Ser Ser Glu Gly Ser Gln Ala Gln Glu Pro Ile				
178	183	188	193	
ctg gtc tca gcc aag acc atg ctg gag agt tca tgc tac ctc att cgc				739
Leu Val Ser Ala Lys Thr Met Leu Glu Ser Ser Ser Tyr Leu Ile Arg				
194	199	204	209	
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Thr Ala Arg Ser Leu Ala Ile Asn Pro Lys Asp Pro Pro Thr Trp Ser				
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Ile Thr Ser Ile Arg Asp Lys Ala Pro Gly Gln Arg Glu Cys Asp Tyr				
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Glu Thr Leu Asp Phe Glu Glu Gln Ile Leu Glu Ala Ala Lys Ser Ile	

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aat ttt gct gaa att atc gaa gct gat gaa gta ctt ctt ttt gag aga	1416
Asn Phe Ala Glu Ile Ile Glu Ala Asp Glu Val Leu Leu Phe Glu Arg	
254 259 264 269	
gct act ttt ctg gta att tct cac tat cag tgt aaa gag cag cgt gat	1464
Ala Thr Phe Leu Val Ile Ser His Tyr Gln Cys Lys Glu Gln Arg Asp	
270 275 280 285	
gcc cat aga ttt gag aaa ata agc aac att att aag cag ttc aag ctg	1512
Ala His Arg Phe Glu Lys Ile Ser Asn Ile Ile Lys Gln Phe Lys Leu	
286 291 296 301	
agc tgc agc aag ctg gct gcc tct ttc cag agt atg gaa gtc agg aac	1560
Ser Cys Ser Lys Leu Ala Ala Ser Phe Gln Ser Met Glu Val Arg Asn	
302 307 312 317	
tct aac ttc gct gct ttc att gac atc ttt aca tcc aac act tat gtg	1608
Ser Asn Phe Ala Ala Phe Ile Asp Ile Phe Thr Ser Asn Thr Tyr Val	



318	323	328	333	
atg gtt gtg atg tct gat ccg tcc att cct tct gca gct act ctg atc				1656
Met Val Val Met Ser Asp Pro Ser Ile Pro Ser Ala Ala Thr Leu Ile				
334	339	344	349	

aac atc cgc aat gcc agg aaa cac ttt gaa aag ctg gaa aga gtg gat				1704
Asn Ile Arg Asn Ala Arg Lys His Phe Glu Lys Leu Glu Arg Val Asp				
350	355	360	365	

gga cca aag cag tgt ctt ctc atg cgc taa a cattgatgaa tattgtttca				1755
Gly Pro Lys Gln Cys Leu Leu Met Arg *				
366	371			

cacaaaaatt aaaagtttcc taattaatgt tgtattcata tatgtaggct ctgaaatggt				1815
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tacataaaag taggtgatat gtaagttttc tgataacaag gttctaatag tgtttaaatg				1995
tactggtaac ctggttccaa tagttgtgtt tgcccaagcc tttctcggca tcattcttgta				2055
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tccgcttagt gcctacggca tgggtcagct ctttctgcca cctccgcctt cgcggtcctc	240
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cacggaatca cttggcctta aagctagcca gctcggccgt gccttgaggc caggttcgag	420
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agcaggcctg agggccatag gcgatgagaa taggcagttg aggggtgaaa aagaaaacaa 540  
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 tgttgcgca atg gaa gaa tct gac tct gag aaa acg acg gag aaa gaa 648  
 Met Glu Glu Ser Asp Ser Glu Lys Thr Thr Glu Lys Glu  
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 aat ctg ggg ccg aga atg gat cca cca cta ggg gaa ccg gaa gga tcg 696  
 Asn Leu Gly Pro Arg Met Asp Pro Pro Leu Gly Glu Pro Glu Gly Ser  
 14 19 24 29  
 ctt ggg tgg gtg cta cca aat aca gcc atg aag aaa aag gtg ctg ttg 744  
 Leu Gly Trp Val Leu Pro Asn Thr Ala Met Lys Lys Lys Val Leu Leu  
 30 35 40 45  
 atg ggt aaa agt ggg tct ggt aag acc agc atg agg tct att atc ttt 792  
 Met Gly Lys Ser Gly Ser Gly Lys Thr Ser Met Arg Ser Ile Ile Phe  
 46 51 56 61  
 gca aat tat att gcc aga gac aca cgt cgc ctt ggc gca aca att gat 840  
 Ala Asn Tyr Ile Ala Arg Asp Thr Arg Arg Leu Gly Ala Thr Ile Asp  
 62 67 72 77  
 gta gaa cat tct cat gtt cga ttt ctg gga aac ctg gta ttg aac ctg 888  
 Val Glu His Ser His Val Arg Phe Leu Gly Asn Leu Val Leu Asn Leu  
 78 83 88 93  
 tgg gat tgt ggt ggg caa gac acc ttc atg gaa aat tat ttc act agc 936  
 Trp Asp Cys Gly Gly Gln Asp Thr Phe Met Glu Asn Tyr Phe Thr Ser  
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 Gln Arg Asp Asn Ile Phe Arg Asn Val Glu Val Leu Ile Tyr Val Phe  
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 gat gtg gag agc cgc gaa ctg gaa aag gac atg cac tat tac caa tca 1032  
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 126 131 136 141  
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 Cys Leu Glu Ala Ile Leu Gln Asn Ser Pro Asp Ala Lys Ile Phe Cys  
 142 147 152 157  
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 Phe Lys Glu Arg Glu Glu Asp Leu Arg Arg Leu Ser Arg Pro Leu Glu  
 174 179 184 189  
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 Cys Ser Cys Phe Arg Thr Ser Ile Trp Asp Glu Thr Leu Tyr Lys Ala  
 190 195 200 205  
 tgg tcc agc ata gtt tat cag ctg att ccc aat gtt cag cag ctg gaa 1272

Trp Ser Ser Ile Val Tyr Gln Leu Ile Pro Asn Val Gln Gln Leu Glu	
206 211 216 221	
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Met Asn Leu Arg Asn Phe Ala Glu Ile Ile Glu Ala Asp Glu Val Leu	
222 227 232 237	
ctt ttt gag aga gct act ttt ctg gta att tct cac tat cag tgt aaa	1368
Leu Phe Glu Arg Ala Thr Phe Leu Val Ile Ser His Tyr Gln Cys Lys	
238 243 248 253	
gag cag cgt gat gcc cat aga ttt gag aaa ata agc aac att att aag	1416
Glu Gln Arg Asp Ala His Arg Phe Glu Lys Ile Ser Asn Ile Ile Lys	
254 259 264 269	
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Gln Phe Lys Leu Ser Cys Ser Lys Leu Ala Ala Ser Phe Gln Ser Met	
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Glu Val Arg Asn Ser Asn Phe Ala Ala Phe Ile Asp Ile Phe Thr Ser	
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Asn Thr Tyr Val Met Val Val Met Ser Asp Pro Ser Ile Pro Ser Ala	
302 307 312 317	
gct act ctg atc aac atc cgc aat gcc agg aaa cac ttt gaa aag ctg	1608
Ala Thr Leu Ile Asn Ile Arg Asn Ala Arg Lys His Phe Glu Lys Leu	
318 323 328 333	
gaa aga gtg gat gga cca aag cag tgt ctt ctc atg cgc taa acattga	1657
Glu Arg Val Asp Gly Pro Lys Gln Cys Leu Leu Met Arg *	
334 339 344	
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<210> 143  
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 <212> DNA  
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Author	Year	Country	Sample Size	Study Design	Findings
Wang et al.	2004	China	1,000	Case-control	Increased risk of lung cancer with high alcohol intake.
Li et al.	2005	China	2,000	Cohort	No significant association between alcohol and lung cancer.
Zhang et al.	2006	China	1,500	Case-control	Increased risk of lung cancer with high alcohol intake.
Chen et al.	2007	China	3,000	Cohort	No significant association between alcohol and lung cancer.
Wu et al.	2008	China	1,200	Case-control	Increased risk of lung cancer with high alcohol intake.
Yang et al.	2009	China	2,500	Cohort	No significant association between alcohol and lung cancer.
Xu et al.	2010	China	1,800	Case-control	Increased risk of lung cancer with high alcohol intake.
Guo et al.	2011	China	2,200	Cohort	No significant association between alcohol and lung cancer.
Hou et al.	2012	China	1,600	Case-control	Increased risk of lung cancer with high alcohol intake.
Wang et al.	2013	China	2,800	Cohort	No significant association between alcohol and lung cancer.
Li et al.	2014	China	1,400	Case-control	Increased risk of lung cancer with high alcohol intake.
Zhang et al.	2015	China	3,200	Cohort	No significant association between alcohol and lung cancer.
Chen et al.	2016	China	1,900	Case-control	Increased risk of lung cancer with high alcohol intake.
Wu et al.	2017	China	2,600	Cohort	No significant association between alcohol and lung cancer.
Yang et al.	2018	China	1,700	Case-control	Increased risk of lung cancer with high alcohol intake.
Xu et al.	2019	China	2,900	Cohort	No significant association between alcohol and lung cancer.
Guo et al.	2020	China	1,500	Case-control	Increased risk of lung cancer with high alcohol intake.

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ttt ctg gga aac ctg gta ttg aac ctg tgg gat tgt ggt ggg caa gac	1032
Phe Leu Gly Asn Leu Val Leu Asn Leu Trp Asp Cys Gly Gly Gln Asp	
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acc ttc atg gaa aat tat ttc act agc caa cgg gac aac atc ttc cga	1080
Thr Phe Met Glu Asn Tyr Phe Thr Ser Gln Arg Asp Asn Ile Phe Arg	
142 147 152 157	
aat gtg gag gtt ctg att tat gtc ttt gat gtg gag agc cgc gaa ctg	1128
Asn Val Glu Val Leu Ile Tyr Val Phe Asp Val Glu Ser Arg Glu Leu	
158 163 168 173	
gaa aag gac atg cac tat tac caa tca tgc ctg gag gcc att ctg cag	1176
Glu Lys Asp Met His Tyr Tyr Gln Ser Cys Leu Glu Ala Ile Leu Gln	
174 179 184 189	
aat tct cca gat gcc aaa ata ttt tgc ttg gta cac aaa atg gat ctg	1224
Asn Ser Pro Asp Ala Lys Ile Phe Cys Leu Val His Lys Met Asp Leu	
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Val Gln Glu Asp Gln Arg Asp Leu Ile Phe Lys Glu Arg Glu Glu Asp	
206 211 216 221	
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Leu Arg Arg Leu Ser Arg Pro Leu Glu Cys Ser Cys Phe Arg Thr Ser	
222 227 232 237	
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Ile Trp Asp Glu Thr Leu Tyr Lys Ala Trp Ser Ser Ile Val Tyr Gln	
238 243 248 253	
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Leu Ile Pro Asn Val Gln Gln Leu Glu Met Asn Leu Arg Asn Phe Ala	
254 259 264 269	
gaa att atc gaa gct gat gaa gta ctt ctt ttt gag aga gct act ttt	1464
Glu Ile Ile Glu Ala Asp Glu Val Leu Leu Phe Glu Arg Ala Thr Phe	
270 275 280 285	
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Leu Val Ile Ser His Tyr Gln Cys Lys Glu Gln Arg Asp Ala His Arg	
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Phe Glu Lys Ile Ser Asn Ile Ile Lys Gln Phe Lys Leu Ser Cys Ser	
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318 323 328 333	
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Ala Ala Phe Ile Asp Ile Phe Thr Ser Asn Thr Tyr Val Met Val Val	
334 339 344 349	
atg tct gat ccg tcc att cct tct gca gct act ctg atc aac atc cgc	1704

Met Ser Asp Pro Ser Ile Pro Ser Ala Ala Thr Leu Ile Asn Ile Arg  
350 355 360 365

aat gcc agg aaa cac ttt gaa aag ctg gaa aga gtg gat gga cca aag 1752  
Asn Ala Arg Lys His Phe Glu Lys Leu Glu Arg Val Asp Gly Pro Lys  
366 371 376 381

cag tgt ctt ctc atg cgc taa ac attgatgaat attgtttcac acaaaaatta 1805  
Gln Cys Leu Leu Met Arg \*  
382 387

aaagtttcct aattaatgtt gtattcatat atgtaggctc tgaaatgttg tgatgcttat 1865

tgcttctgta tttcttctct actccctagt cttaatgttt aaccttgaat gctattaact 1925

taaatagcca ttgaggagtt agaagatgaa ttgttcatga agtcgggtgtt acataaaagt 1985

aggtgatatg taagttttct gataacaagg ttctaatagt gtttaaagt actggttaacc 2045

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Met Ala Ser Lys Arg Lys Ser Thr Thr Pro Cys Met Ile Pro Val Lys  
1 5 10 15

act gtg gtg ttg caa gat gcc agc atg gag gcc cag ccc gct gag acc 156  
Thr Val Val Leu Gln Asp Ala Ser Met Glu Ala Gln Pro Ala Glu Thr  
17 22 27 32

ttg cct gaa gga ccc cag cag gat ctg ccc cca gaa gca tct gct gcc 204  
Leu Pro Glu Gly Pro Gln Gln Asp Leu Pro Pro Glu Ala Ser Ala Ala  
33 38 43 48

agc agt gag gca gca cag aac ccc agc agt act gat ggc tct aca ctg 252  
Ser Ser Glu Ala Ala Gln Asn Pro Ser Ser Thr Asp Gly Ser Thr Leu  
49 54 59 64

gcc aat ggg cat cgg agc act tta gat ggc tat tta tat tcc tgt aaa 300

Ala Asn Gly His Arg Ser Thr Leu Asp Gly Tyr Leu Tyr Ser Cys Lys	
65 70 75 80	
tac tgc gat ttc aga tcc cat gac atg acc caa ttt gtg gga cat atg	348
Tyr Cys Asp Phe Arg Ser His Asp Met Thr Gln Phe Val Gly His Met	
81 86 91 96	
aac tca gag cac aca gac ttt aat aaa gac cca acc ttt gta tgc agt	396
Asn Ser Glu His Thr Asp Phe Asn Lys Asp Pro Thr Phe Val Cys Ser	
97 102 107 112	
ggg tgc agt ttt ctg gca aaa acc cct gag ggg ctt tcc ttg cac aat	444
Gly Cys Ser Phe Leu Ala Lys Thr Pro Glu Gly Leu Ser Leu His Asn	
113 118 123 128	
gcc aca tgt cac tcc ggg gaa gcc agc ttt gtg tgg aac gtg gcc aag	492
Ala Thr Cys His Ser Gly Glu Ala Ser Phe Val Trp Asn Val Ala Lys	
129 134 139 144	
cca gac aat cat gtg gtt gtg gag cag agc atc cct gag agc acc agc	540
Pro Asp Asn His Val Val Val Glu Gln Ser Ile Pro Glu Ser Thr Ser	
145 150 155 160	
act cct gac cta gcg ggt gag ccc agt gct gaa ggg gct gat gga cag	588
Thr Pro Asp Leu Ala Gly Glu Pro Ser Ala Glu Gly Ala Asp Gly Gln	
161 166 171 176	
gca gaa atc atc att acc aaa act cca atc atg aag ata atg aaa ggc	636
Ala Glu Ile Ile Ile Thr Lys Thr Pro Ile Met Lys Ile Met Lys Gly	
177 182 187 192	
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Lys Ala Glu Ala Lys Lys Ile His Thr Leu Lys Glu Asn Val Pro Ser	
193 198 203 208	
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Gln Pro Val Gly Glu Ala Leu Pro Lys Leu Ser Thr Gly Glu Met Glu	
209 214 219 224	
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Val Arg Glu Gly Asp His Ser Phe Ile Asn Gly Ala Val Pro Val Ser	
225 230 235 240	
cag gca tct gcc agc tct gca aaa aac ccc cat gcc gcc aac ggg ccc	828
Gln Ala Ser Ala Ser Ser Ala Lys Asn Pro His Ala Ala Asn Gly Pro	
241 246 251 256	
ctg ata gga aca gtg cca gtt ttg cca gct ggc ata gca cag ttc ctc	876
Leu Ile Gly Thr Val Pro Val Leu Pro Ala Gly Ile Ala Gln Phe Leu	
257 262 267 272	
tcc ctc cag cag cag ccc cca gtg cat gcc caa cac cat gtc cac cag	924
Ser Leu Gln Gln Gln Pro Pro Val His Ala Gln His His Val His Gln	
273 278 283 288	
cca ctg ccc acg gcc aag gcc ctt ccc aaa gtg atg atc ccc ctg agc	972
Pro Leu Pro Thr Ala Lys Ala Leu Pro Lys Val Met Ile Pro Leu Ser	

289	294	299	304	
agc att cca acg tac	agt gca gcc atg gac	tct aac agc ttc ctg aag		1020
Ser Ile Pro Thr Tyr	Ser Ala Ala Met Asp	Ser Asn Ser Phe Leu Lys		
305	310	315	320	
aac tcc ttc cac aag	ttc ccc tac ccc acc	aaa gcc gag ctc tgc tat		1068
Asn Ser Phe His Lys	Phe Pro Tyr Pro Thr	Lys Ala Glu Leu Cys Tyr		
321	326	331	336	
ttg act gtg gtg acc	aag tat cca gaa gaa	cag ctc aag atc tgg ttc		1116
Leu Thr Val Val Thr	Lys Tyr Pro Glu Glu	Gln Leu Lys Ile Trp Phe		
337	342	347	352	
aca gcc caa agg ctg	aag cag ggg atc agc	tgg tcc cct gag gag att		1164
Thr Ala Gln Arg Leu	Lys Gln Gly Ile Ser	Trp Ser Pro Glu Glu Ile		
353	358	363	368	
gag gat gcc cgg aaa	aag atg ttc aat aca	gtc atc cag tct gtg cct		1212
Glu Asp Ala Arg Lys	Lys Met Phe Asn Thr	Val Ile Gln Ser Val Pro		
369	374	379	384	
cag ccc aca att acg	gtt cta aat acc cca	ctc gtc gcc agt gct ggc		1260
Gln Pro Thr Ile Thr	Val Leu Asn Thr Pro	Leu Val Ala Ser Ala Gly		
385	390	395	400	
aat gtc cag cat ctc	atc cag gcc gct ctt	cca ggt cac gtt gtg ggg		1308
Asn Val Gln His Leu	Ile Gln Ala Ala Leu	Pro Gly His Val Val Gly		
401	406	411	416	
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Gln Pro Glu Gly Thr	Gly Gly Gly Leu Leu	Val Thr Gln Pro Leu Met		
417	422	427	432	
gcc aat ggg ttg caa	gca aca agt tcc cct	ctc ccc ctc acg gtg aca		1404
Ala Asn Gly Leu Gln	Ala Thr Ser Ser Pro	Leu Pro Leu Thr Val Thr		
433	438	443	448	
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Ser Val Pro Lys Gln	Pro Gly Val Ala Pro	Ile Asn Thr Val Cys Ser		
449	454	459	464	
aat aca acg tca gct	gtg aag gtg gtc aat	gcg gcc cag tgc ctc ctc		1500
Asn Thr Thr Ser Ala	Val Lys Val Val Asn	Ala Ala Gln Ser Leu Leu		
465	470	475	480	
acg gcc tgc ccc agc	ata acc tcc caa gcc	ttc ctt gat gct agc atc		1548
Thr Ala Cys Pro Ser	Ile Thr Ser Gln Ala	Phe Leu Asp Ala Ser Ile		
481	486	491	496	
tac aaa aat aag aaa	tct cat gaa cag ctg	tca gct ctg aaa ggg agc		1596
Tyr Lys Asn Lys Lys	Ser His Glu Gln Leu	Ser Ala Leu Lys Gly Ser		
497	502	507	512	
ttc tgt cgg aac cag	ttc cca ggg cag agc	gaa gtt gaa cat ctc aca		1644
Phe Cys Arg Asn Gln	Phe Pro Gly Gln Ser	Glu Val Glu His Leu Thr		
513	518	523	528	



aaa gtg acg ggc ctc agt acc aga gag gtg cgg aaa tgg ttc agt gat	1692
Lys Val Thr Gly Leu Ser Thr Arg Glu Val Arg Lys Trp Phe Ser Asp	
529 534 539 544	
cgt aga tac cac tgc cgg aac ttg aag ggc tcc aga gcg atg ata cct	1740
Arg Arg Tyr His Cys Arg Asn Leu Lys Gly Ser Arg Ala Met Ile Pro	
545 550 555 560	
gga gat cac agt tcc atc atc att gac tct gtg cca gag gtg tcc ttc	1788
Gly Asp His Ser Ser Ile Ile Ile Asp Ser Val Pro Glu Val Ser Phe	
561 566 571 576	
tcc cca tcg tcc aag gtc cct gag gta acc tgc att ccg aca aca gcc	1836
Ser Pro Ser Ser Lys Val Pro Glu Val Thr Cys Ile Pro Thr Thr Ala	
577 582 587 592	
aca cta gca acc cac cct tct gcc aaa cga caa tct tgg cac cag act	1884
Thr Leu Ala Thr His Pro Ser Ala Lys Arg Gln Ser Trp His Gln Thr	
593 598 603 608	
cct gac ttc aca cca acc aaa tac aag gag aga gcc cct gag cag ctc	1932
Pro Asp Phe Thr Pro Thr Lys Tyr Lys Glu Arg Ala Pro Glu Gln Leu	
609 614 619 624	
aga gcc ctg gag agc agt ttt gca caa aac cct ctt cct ctt gat gag	1980
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625 630 635 640	
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Glu Leu Asp Arg Leu Arg Ser Glu Thr Lys Met Thr Arg Arg Glu Ile	
641 646 651 656	
gat agc tgg ttt tca gag aga cgg aaa aaa gtg aat gct gag gag acc	2076
Asp Ser Trp Phe Ser Glu Arg Arg Lys Lys Val Asn Ala Glu Glu Thr	
657 662 667 672	
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Lys Lys Ala Glu Glu Asn Ala Ser Gln Glu Glu Glu Glu Ala Ala Glu	
673 678 683 688	
gat gag ggt gga gaa gag gat ttg gcc agt gag cta agg gtc tct ggt	2172
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689 694 699 704	
gaa aat ggc tct ctg gaa atg ccc agc agc cat atc ttg gca gag cgc	2220
Glu Asn Gly Ser Leu Glu Met Pro Ser Ser His Ile Leu Ala Glu Arg	
705 710 715 720	
aaa gtc agc ccc att aaa atc aac ctg aag aac ctg agg gtc act gaa	2268
Lys Val Ser Pro Ile Lys Ile Asn Leu Lys Asn Leu Arg Val Thr Glu	
721 726 731 736	
gcc aat ggc agg aac gag att cca ggg ctg ggt gcc tgt gac cct gag	2316
Ala Asn Gly Arg Asn Glu Ile Pro Gly Leu Gly Ala Cys Asp Pro Glu	
737 742 747 752	

gat gat gag tca aac aaa ctg gca gag cag ctc cca ggc aaa gtg agc	2364
Asp Asp Glu Ser Asn Lys Leu Ala Glu Gln Leu Pro Gly Lys Val Ser	
753 758 763 768	
tgc aaa aag act gcc cag cag cgg cac ttg ctg cgg cag ctc ttt gtc	2412
Cys Lys Lys Thr Ala Gln Gln Arg His Leu Leu Arg Gln Leu Phe Val	
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Val Asp Trp Trp Ser Leu Gly Ile Leu Leu Phe Glu Leu Leu Thr Gly				
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gcc tcg ccc ttc acc ctg gag ggc gag agg aac acg cag gct gag gtg				1084
Ala Ser Pro Phe Thr Leu Glu Gly Glu Arg Asn Thr Gln Ala Glu Val				
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Ser Arg Arg Ile Leu Lys Cys Ser Pro Pro Phe Pro Pro Arg Ile Gly				
314	319	324	329	
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Pro Val Ala Gln Asp Leu Leu Gln Arg Leu Leu Cys Lys Asp Pro Lys				
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aag cga ttg ggc gcg ggg ccc cag ggg gca caa gaa gtc cgg aac cat				1228
Lys Arg Leu Gly Ala Gly Pro Gln Gly Ala Gln Glu Val Arg Asn His				
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ccc ttc ttc cag ggc ctc gat tgg gtg gct ctg gct gcc agg aag att				1276
Pro Phe Phe Gln Gly Leu Asp Trp Val Ala Leu Ala Ala Arg Lys Ile				
362	367	372	377	

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Pro Ala Pro Phe Arg Pro Gln Ile Arg Ser Glu Leu Asp Val Gly Asn	
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Phe Ala Glu Glu Phe Thr Arg Leu Glu Pro Val Tyr Ser Pro Pro Gly	
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Ser Pro Pro Pro Gly Asp Pro Arg Ile Phe Gln Gly Tyr Ser Phe Val	
410 415 420 425	
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Arg Ser Ala Met Met Gln Asp Ser Pro Phe Phe Gln Gln Tyr Glu Leu	
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Asp Leu Arg Glu Pro Ala Leu Gly Gln Gly Ser Phe Ser Val Cys Arg	
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Arg Cys Arg Gln Arg Gln Ser Gly Gln Glu Phe Ala Val Lys Ile Leu	
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Ser Arg Arg Leu Glu Ala Asn Thr Gln Arg Glu Val Ala Ala Leu Arg	
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Leu Cys Gln Ser His Pro Asn Val Val Asn Leu His Glu Val His His	
522 527 532 537	
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Asp Gln Leu His Thr Tyr Leu Val Leu Glu Leu Leu Arg Gly Gly Glu	
538 543 548 553	
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Leu Leu Glu His Ile Arg Lys Lys Arg His Phe Ser Glu Ser Glu Ala	
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Met Asn Lys Ser Arg Trp Gln  
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Ser Arg Arg Arg His Gly Arg Arg Ser His Gln Gln Asn Pro Trp Phe  
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Arg Leu Arg Asp Ser Glu Asp Arg Ser Asp Ser Arg Ala Ala Gln Pro  
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Gly Thr Ala Gly Thr Ser Ser Val Pro Glu Leu Pro Gly Phe Tyr Phe  
56 61 66 71

gac cct gaa aag aaa cgc tac ttc cgc ttg ctc cct gga cat aac aac 473  
Asp Pro Glu Lys Lys Arg Tyr Phe Arg Leu Leu Pro Gly His Asn Asn  
72 77 82 87

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Cys Asn Pro Leu Thr Lys Glu Ser Ile Arg Gln Lys Glu Met Glu Ser  
88 93 98 103

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104 109 114 119

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Phe Leu Asn Val Thr Asn Tyr Cys His Leu Ala His Glu Leu Arg Leu  
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Ser Cys Met Glu Arg Lys Lys Val Gln Ile Arg Ser Met Asp Pro Ser  
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gcc ttg gca agc gac cga ttt aac ctc ata ctg gca gat acc aac agt 761  
Ala Leu Ala Ser Asp Arg Phe Asn Leu Ile Leu Ala Asp Thr Asn Ser  
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Asp Arg Leu Phe Thr Val Asn Asp Val Thr Val Gly Gly Ser Lys Tyr  
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Phe Val Asn Ser His	Pro Gly Ile Asp Arg	Pro Gly Met Leu Cys Ser		
264	269	274	279	
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Phe Arg Ile Pro Gly	Ala Trp Ser Cys Ala	Trp Ser Leu Asn Ile Gln		
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Ala Asn Asn Cys Phe	Ser Thr Gly Leu Ser	Arg Arg Val Leu Leu Thr		
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328	333	338	343	
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Arg Ser Gly Glu Ile	Phe Ala Ile Asp Leu Arg	Cys Gly Asn Gln Gly		
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aag gga tgg aag gcc acc cgc ctg ttt cat gat tca gca gtg acc tct			1337	
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Pro Glu Arg Cys Asn Phe Thr Leu Ala Glu Ser Lys Ala Ser Ser His	
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Ser Val Ser Ile Gln Trp Arg Ile Leu Gly Ser Pro Cys Asn Phe Ser	
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Leu Ile Tyr Ser Ser Asp Thr Leu Gly Ala Ala Leu Cys Pro Thr Phe	
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Val Val Leu Gln Thr Asp Pro Leu Pro Pro Ala Arg Phe Gly Val Ser	
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Lys Glu Lys Thr Thr Ser Thr Gly Leu His Val Trp Trp Thr Pro Ser	
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Ser Thr Val Pro Ser Pro Val Lys Asp Ile Gly Ile Ser Thr Lys Ala	
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Asn Ser Leu Leu Ile Ser Trp Ser His Gly Ser Gly Asn Val Glu Arg	

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Tyr Arg Leu Met Leu	Met Asp Lys Gly Ile	Leu Val His Gly Gly Val		
232	237	242	247	
gtg gac aaa cat gct	act tcc tat gct ttt	cac ggg ctg tcc cct ggc		819
Val Asp Lys His Ala	Thr Ser Tyr Ala Phe	His Gly Leu Ser Pro Gly		
248	253	258	263	
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Tyr Leu Tyr Asn Leu	Thr Val Met Thr Glu	Ala Ala Gly Leu Gln Asn		
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Tyr Arg Trp Lys Leu	Val Arg Thr Ala Pro	Met Glu Val Ser Asn Leu		
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aag gtg aca aat gat	ggc agt ttg acc tct	cta aaa gtc aaa tgg caa		963
Lys Val Thr Asn Asp	Gly Ser Leu Thr Ser	Leu Lys Val Lys Trp Gln		
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Arg Pro Pro Gly Asn	Val Asp Ser Tyr Asn	Ile Thr Leu Ser His Lys		
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Gly Thr Ile Lys Glu	Ser Arg Val Leu Ala	Pro Trp Ile Thr Glu Thr		
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His Phe Lys Glu Leu	Val Pro Gly Arg Leu	Tyr Gln Val Thr Val Ser		
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376	381	386	391	
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Arg Ser Leu Val Val	Ser Trp Ser Pro Pro	Ala Gly Asp Trp Glu Gln		
392	397	402	407	
tat cgg atc cta ctc	ttc aat gat tct gtg	gtg ctg ctc aac atc act		1299
Tyr Arg Ile Leu Leu	Phe Asn Asp Ser Val	Val Leu Leu Asn Ile Thr		
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Val Gly Lys Glu Glu	Thr Gln Tyr Val Met	Asp Gly Thr Gly Leu Val		
424	429	434	439	
cgg gga aga cag tat	gag gtg gaa gtc att	gtt gag agt gga aat ttg		1395
Pro Gly Arg Gln Tyr	Glu Val Glu Val Ile	Val Glu Ser Gly Asn Leu		
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Gln Leu Arg Val Lys His Ala Asn Glu Thr Ser Leu Ser Ile Met Trp	
472 477 482 487	
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Gln Thr Pro Val Ala Glu Trp Glu Lys Tyr Ile Ile Ser Leu Ala Asp	
488 493 498 503	
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Thr Ser Ile Ser Gly Asp Leu Lys Asn Ser Ser Ser Val Lys Gly Arg	
536 541 546 551	
aca gtg cct gcc caa gtg act gac ttg cat gtg gcc aac caa gga atg	1731
Thr Val Pro Ala Gln Val Thr Asp Leu His Val Ala Asn Gln Gly Met	
552 557 562 567	
acc agt agt ctg ttt act aac tgg acc cag gca caa gga gac gta gaa	1779
Thr Ser Ser Leu Phe Thr Asn Trp Thr Gln Ala Gln Gly Asp Val Glu	
568 573 578 583	
ttt tac caa gtc tta ctg atc cat gaa aat gtg gtc att aaa aat gaa	1827
Phe Tyr Gln Val Leu Leu Ile His Glu Asn Val Val Ile Lys Asn Glu	
584 589 594 599	
agc atc tcc agt gag acc agc aga tac agc ttc cac tct ctc aag tcc	1875
Ser Ile Ser Ser Glu Thr Ser Arg Tyr Ser Phe His Ser Leu Lys Ser	
600 605 610 615	
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Gly Ser Leu Tyr Ser Val Val Val Thr Thr Val Ser Gly Gly Ile Ser	
616 621 626 631	
tcc cga caa gtg gtt gtg gag gga aga aca gtc cct tcc agt gtg agt	1971
Ser Arg Gln Val Val Val Glu Gly Arg Thr Val Pro Ser Ser Val Ser	
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Gly Val Thr Val Asn Asn Ser Gly Arg Asn Asp Tyr Leu Ser Val Ser	
648 653 658 663	
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Trp Leu Leu Ala Pro Gly Asp Val Asp Asn Tyr Glu Val Thr Leu Ser	
664 669 674 679	

cat gac ggc aag gtg gtt cag tcc ctt gtc att gcc aag tct gtc aga	2115
His Asp Gly Lys Val Val Gln Ser Leu Val Ile Ala Lys Ser Val Arg	
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gaa tgt tcc ttc agc tcc ctc acc cca ggc cgc ctc tac acc gtg acc	2163
Glu Cys Ser Phe Ser Ser Leu Thr Pro Gly Arg Leu Tyr Thr Val Thr	
696 701 706 711	
ata act aca agg agt ggc aag tat gaa aat cac tcc ttc agc caa gag	2211
Ile Thr Thr Arg Ser Gly Lys Tyr Glu Asn His Ser Phe Ser Gln Glu	
712 717 722 727	
cgg aca gtg cct gac aaa gtc cag gga gtc agt gtt agc aac tca gcc	2259
Arg Thr Val Pro Asp Lys Val Gln Gly Val Ser Val Ser Asn Ser Ala	
728 733 738 743	
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Arg Ser Asp Tyr Leu Arg Val Ser Trp Val His Ala Thr Gly Asp Phe	
744 749 754 759	
gat cac tat gaa gtc acc att aaa aac aaa aac aac ttc att caa act	2355
Asp His Tyr Glu Val Thr Ile Lys Asn Lys Asn Asn Phe Ile Gln Thr	
760 765 770 775	
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Lys Ser Ile Pro Lys Ser Glu Asn Glu Cys Val Phe Val Gln Leu Val	
776 781 786 791	
cct gga cgg ttg tac agt gtc act gtt act aca aaa agt gga caa tat	2451
Pro Gly Arg Leu Tyr Ser Val Thr Val Thr Thr Lys Ser Gly Gln Tyr	
792 797 802 807	
gaa gcc aat gaa caa ggg aat ggg aga aca att cca gag cct gtt aag	2499
Glu Ala Asn Glu Gln Gly Asn Gly Arg Thr Ile Pro Glu Pro Val Lys	
808 813 818 823	
gat cta aca ttg cgc aac agg agc act gag gac ttg cat gtg act tgg	2547
Asp Leu Thr Leu Arg Asn Arg Ser Thr Glu Asp Leu His Val Thr Trp	
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Ser Gly Ala Asn Gly Asp Val Asp Gln Tyr Glu Ile Gln Leu Leu Phe	
840 845 850 855	
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Asn Asp Met Lys Val Phe Pro Pro Phe His Leu Val Asn Thr Ala Thr	
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Glu Tyr Arg Phe Thr Ser Leu Thr Pro Gly Arg Gln Tyr Lys Ile Leu	
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Val Leu Thr Ile Ser Gly Asp Val Gln Gln Ser Ala Phe Ile Glu Gly	
888 893 898 903	
ttc aca gtt cct agt gct gtc aaa aat att cac att tct ccc aat gga	2787

Phe Thr Val Pro Ser Ala Val Lys Asn Ile His Ile Ser Pro Asn Gly	
904 909 914 919	
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Ala Thr Asp Ser Leu Thr Val Asn Trp Thr Pro Gly Gly Gly Asp Val	
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Asp Ser Tyr Thr Val Ser Ala Phe Arg His Ser Gln Lys Val Asp Ser	
936 941 946 951	
cag act att ccc aag cac gtc ttt gag cac acg ttc cac aga ctg gag	2931
Gln Thr Ile Pro Lys His Val Phe Glu His Thr Phe His Arg Leu Glu	
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Ala Gly Glu Gln Tyr Gln Ile Met Ile Ala Ser Val Ser Gly Ser Leu	
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Gly Val Ile Ala Asp Asn Ala Tyr Ser Ser Tyr Ser Leu Ile Val Ser	
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Trp Gln Lys Ala Ala Gly Val Ala Glu Arg Tyr Asp Ile Leu Leu Leu	
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Thr Glu Asn Gly Ile Leu Leu Arg Asn Thr Ser Glu Pro Ala Thr Thr	
1032 1037 1042 1047	
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Lys Gln His Lys Phe Glu Asp Leu Thr Pro Gly Lys Lys Tyr Lys Ile	
1048 1053 1058 1063	
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Gln Ile Leu Thr Val Ser Gly Gly Leu Phe Ser Lys Glu Ala Gln Thr	
1064 1069 1074 1079	
gaa ggc cga aca gtc cca gca gct gtc acc gac ctg agg atc aca gag	3315
Glu Gly Arg Thr Val Pro Ala Ala Val Thr Asp Leu Arg Ile Thr Glu	
1080 1085 1090 1095	
aac tcc acc agg cac ctg tcc ttc cgc tgg acc gcc tca gag ggg gag	3363
Asn Ser Thr Arg His Leu Ser Phe Arg Trp Thr Ala Ser Glu Gly Glu	
1096 1101 1106 1111	
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Leu Ser Trp Tyr Asn Ile Phe Leu Tyr Asn Pro Asp Gly Asn Leu Gln	
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Glu Arg Ala Gln Val Asp Pro Leu Val Gln Ser Phe Ser Phe Gln Asn	

1128	1133	1138	1143	
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Leu Leu Gln Gly Arg Met Tyr Lys Met Val Ile Val Thr His Ser Gly				
1144	1149	1154	1159	
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Glu Leu Ser Asn Glu Ser Phe Ile Phe Gly Arg Thr Val Pro Ala Ser				
1160	1165	1170	1175	
gtg agt cat ctc agg ggg tcc aat cgg aac acg aca gac agc ctt tgg				3603
Val Ser His Leu Arg Gly Ser Asn Arg Asn Thr Thr Asp Ser Leu Trp				
1176	1181	1186	1191	
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Phe Asn Trp Ser Pro Ala Ser Gly Asp Phe Asp Phe Tyr Glu Leu Ile				
1192	1197	1202	1207	
ctc tat aat ccc aat ggc aca aag aag gaa aac tgg aaa gac aag gac				3699
Leu Tyr Asn Pro Asn Gly Thr Lys Lys Glu Asn Trp Lys Asp Lys Asp				
1208	1213	1218	1223	
ctg acg gag tgg cgg ttt caa ggc ctt gtt cct gga agg aag tac gtg				3747
Leu Thr Glu Trp Arg Phe Gln Gly Leu Val Pro Gly Arg Lys Tyr Val				
1224	1229	1234	1239	
ctg tgg gtg gta act cac agt gga gat ctc agc aat aaa gtc aca gcg				3795
Leu Trp Val Val Thr His Ser Gly Asp Leu Ser Asn Lys Val Thr Ala				
1240	1245	1250	1255	
gag agc aga aca gct cca agt cct ccc agt ctt atg tca ttt gct gac				3843
Glu Ser Arg Thr Ala Pro Ser Pro Pro Ser Leu Met Ser Phe Ala Asp				
1256	1261	1266	1271	
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Ile Ala Asn Thr Ser Leu Ala Ile Thr Trp Lys Gly Pro Pro Asp Trp				
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Thr Asp Tyr Asn Asp Phe Glu Leu Gln Trp Leu Pro Arg Asp Ala Leu				
1288	1293	1298	1303	
act gtc ttc aac ccc tac aac aac aga aaa tca gaa gga cgc att gtg				3987
Thr Val Phe Asn Pro Tyr Asn Asn Arg Lys Ser Glu Gly Arg Ile Val				
1304	1309	1314	1319	
tat ggt ctt cgt cca ggg aga tcc tat caa ttc aac gtc aag act gtc				4035
Tyr Gly Leu Arg Pro Gly Arg Ser Tyr Gln Phe Asn Val Lys Thr Val				
1320	1325	1330	1335	
agt ggt gat tcc tgg aaa act tac agc aaa cca att ttt gga tct gtg				4083
Ser Gly Asp Ser Trp Lys Thr Tyr Ser Lys Pro Ile Phe Gly Ser Val				
1336	1341	1346	1351	
agg aca aag cct gac aag ata caa aac ctg cat tgc cgg cct cag aac				4131
Arg Thr Lys Pro Asp Lys Ile Gln Asn Leu His Cys Arg Pro Gln Asn				
1352	1357	1362	1367	

tcc acg gcc att gcc tgt tct tgg atc cct cct gat tct gac ttt gat	4179
Ser Thr Ala Ile Ala Cys Ser Trp Ile Pro Pro Asp Ser Asp Phe Asp	
1368 1373 1378 1383	
ggt tat agt att gaa tgc cgg aaa atg gac acc caa gaa gtt gag ttt	4227
Gly Tyr Ser Ile Glu Cys Arg Lys Met Asp Thr Gln Glu Val Glu Phe	
1384 1389 1394 1399	
tcc aga aag ctg gag aaa gaa aaa tct ctg ctc aac atc atg atg cta	4275
Ser Arg Lys Leu Glu Lys Glu Lys Ser Leu Leu Asn Ile Met Met Leu	
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gtg ccc cat aag agg tac ctg gtg tcc atc aaa gtg cag tgc gcc ggc	4323
Val Pro His Lys Arg Tyr Leu Val Ser Ile Lys Val Gln Ser Ala Gly	
1416 1421 1426 1431	
atg acc agc gag gtg gtt gaa gac agc act atc aca atg ata gac cgc	4371
Met Thr Ser Glu Val Val Glu Asp Ser Thr Ile Thr Met Ile Asp Arg	
1432 1437 1442 1447	
ccc cct cct cca ccc cca cac att cgt gtg aat gaa aag gat gtg cta	4419
Pro Pro Pro Pro Pro Pro His Ile Arg Val Asn Glu Lys Asp Val Leu	
1448 1453 1458 1463	
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Ile Ser Lys Ser Ser Ile Asn Phe Thr Val Asn Cys Ser Trp Phe Ser	
1464 1469 1474 1479	
gac acc aat gga gct gtg aaa tac ttc aca gtg gtg gtg aga gag gct	4515
Asp Thr Asn Gly Ala Val Lys Tyr Phe Thr Val Val Val Arg Glu Ala	
1480 1485 1490 1495	
gat ggc agt gat gag ctg aag cca gaa cag cag cac cct ctc cct tcc	4563
Asp Gly Ser Asp Glu Leu Lys Pro Glu Gln Gln His Pro Leu Pro Ser	
1496 1501 1506 1511	
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Tyr Leu Glu Tyr Arg His Asn Ala Ser Ile Arg Val Tyr Gln Thr Asn	
1512 1517 1522 1527	
tat ttt gcc agc aaa tgt gcc gaa aat cct aac agc aac tcc aag agt	4659
Tyr Phe Ala Ser Lys Cys Ala Glu Asn Pro Asn Ser Asn Ser Lys Ser	
1528 1533 1538 1543	
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Phe Asn Ile Lys Leu Gly Ala Glu Met Glu Ser Leu Gly Gly Lys Cys	
1544 1549 1554 1559	
gat ccc act cag caa aaa ttc tgt gat gga cca ctg aag cca cac act	4755
Asp Pro Thr Gln Gln Lys Phe Cys Asp Gly Pro Leu Lys Pro His Thr	
1560 1565 1570 1575	
gcc tac aga atc agc att cga gct ttt aca cag ctc ttt gat gag gac	4803
Ala Tyr Arg Ile Ser Ile Arg Ala Phe Thr Gln Leu Phe Asp Glu Asp	
1576 1581 1586 1591	



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Leu Lys Glu Phe Thr Lys Pro Leu Tyr Ser Asp Thr Phe Phe Ser Leu	
1592 1597 1602 1607	
ccc atc act act gaa tca gag ccc ttg ttt gga gct att gaa ggt gtg	4899
Pro Ile Thr Thr Glu Ser Glu Pro Leu Phe Gly Ala Ile Glu Gly Val	
1608 1613 1618 1623	
agt gct ggt ctg ttt tta att ggc atg cta gtg gct gtt gtt gcc tta	4947
Ser Ala Gly Leu Phe Leu Ile Gly Met Leu Val Ala Val Val Ala Leu	
1624 1629 1634 1639	
ttg atc tgc aga cag aaa gtg agc cat ggt cga gaa aga ccc tct gcc	4995
Leu Ile Cys Arg Gln Lys Val Ser His Gly Arg Glu Arg Pro Ser Ala	
1640 1645 1650 1655	
cgt ctg agc att cgt agg gat cga cca tta tct gtc cac tta aac ctg	5043
Arg Leu Ser Ile Arg Arg Asp Arg Pro Leu Ser Val His Leu Asn Leu	
1656 1661 1666 1671	
ggc cag aaa ggt aac cgg aaa act tct tgt cca ata aaa ata aat cag	5091
Gly Gln Lys Gly Asn Arg Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln	
1672 1677 1682 1687	
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Phe Glu Gly His Phe Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu	
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tcc aag gaa tac gag gag tta aaa gac gtg ggc cga aac cag tca tgt	5187
Ser Lys Glu Tyr Glu Glu Leu Lys Asp Val Gly Arg Asn Gln Ser Cys	
1704 1709 1714 1719	
gac att gca ctc ttg ccg gag aat aga ggg aaa aat cga tac aac aat	5235
Asp Ile Ala Leu Leu Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn	
1720 1725 1730 1735	
ata ttg ccc tat gat gcc acg cga gtg aag ctc tcc aat gta gat gat	5283
Ile Leu Pro Tyr Asp Ala Thr Arg Val Lys Leu Ser Asn Val Asp Asp	
1736 1741 1746 1751	
gat cct tgc tct gac tac atc aat gcc agc tac atc cct ggc aac aac	5331
Asp Pro Cys Ser Asp Tyr Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn	
1752 1757 1762 1767	
ttc aga aga gaa tac att gtc act cag gga ccg ctt cct ggc acc aag	5379
Phe Arg Arg Glu Tyr Ile Val Thr Gln Gly Pro Leu Pro Gly Thr Lys	
1768 1773 1778 1783	
gat gac ttc tgg aaa atg gtg tgg gaa caa aac gtt cac aac atc gtc	5427
Asp Asp Phe Trp Lys Met Val Trp Glu Gln Asn Val His Asn Ile Val	
1784 1789 1794 1799	
atg gtg acc cag tgt gtt gag aag ggc cga gta aag tgt gac cat tac	5475
Met Val Thr Gln Cys Val Glu Lys Gly Arg Val Lys Cys Asp His Tyr	
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gaacatgaag agatgcatcc ataaatccca ctagcaataa tgtgctcctc tgatcttagt	180
gatattcact ttttaagtgat gccataaact attgtaataa tgctgtattt atgacagcat	240
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catttactaa tgatatcctt agttttatag gcaccagtca cagatcaacc cgcgtccgcc	360
cacgcgtccg cccacgcgtc cgcccacgcg tccggtgcaa aatcagagag ggggtgcaaga	420
tcctgatttt tcaggagttc aagcgaca atg gca gcc caa tac ggc agt atg	472
Met Ala Ala Gln Tyr Gly Ser Met	
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Ser Phe Asn Pro Ser Thr Pro Gly Ala Ser Tyr Gly Pro Gly Arg Gln	
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Glu Pro Arg Asn Ser Gln Leu Arg Ile Val Leu Val Gly Lys Thr Gly	
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Ala Gly Lys Ser Ala Thr Gly Asn Ser Ile Leu Gly Arg Lys Val Phe	
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His Ser Gly Thr Ala Ala Lys Ser Ile Thr Lys Lys Cys Glu Lys Arg	
57 62 67 72	
agc agc tca tgg aag gaa aca gaa ctt gtc gta gtt gac aca cca ggc	712
Ser Ser Ser Trp Lys Glu Thr Glu Leu Val Val Val Asp Thr Pro Gly	
73 78 83 88	
att ttc gac aca gag gtg ccc aat gct gaa acg tcc aag gag att att	760
Ile Phe Asp Thr Glu Val Pro Asn Ala Glu Thr Ser Lys Glu Ile Ile	
89 94 99 104	
cgc tgc att ctt ctg acc tcc cca ggg cct cat gct ctg ctt ctg gtg	808
Arg Cys Ile Leu Leu Thr Ser Pro Gly Pro His Ala Leu Leu Leu Val	

105	110	115	120	
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Val Pro Leu Gly Arg	Tyr Thr Glu Glu Glu	His Lys Ala Thr Glu Lys		
121	126	131	136	
atc ctg aaa atg ttt	gga gag agg gct aga	agt ttc atg att ctc ata	904	
Ile Leu Lys Met Phe	Gly Glu Arg Ala Arg	Ser Phe Met Ile Leu Ile		
137	142	147	152	
ttc acc cgg aaa gat	gac tta ggt gac acc	aat ttg cat gac tac tta	952	
Phe Thr Arg Lys Asp	Asp Leu Gly Asp Thr	Asn Leu His Asp Tyr Leu		
153	158	163	168	
agg gaa gct cca gaa	gac att caa gac ttg	atg gac att ttc ggt gac	1000	
Arg Glu Ala Pro Glu	Asp Ile Gln Asp Leu	Met Asp Ile Phe Gly Asp		
169	174	179	184	
cgc tac tgt gcg tta	aac aac aag gca aca	ggc gct gag cag gag gcc	1048	
Arg Tyr Cys Ala Leu	Asn Asn Lys Ala Thr	Gly Ala Glu Gln Glu Ala		
185	190	195	200	
cag agg gca cag ttg	ctg ggc ctg atc cag	cgc gtg gtg agg gag aac	1096	
Gln Arg Ala Gln Leu	Leu Gly Leu Ile Gln	Arg Val Val Arg Glu Asn		
201	206	211	216	
aag gaa ggc tgc tac	act aat agg atg tac	caa agg gcg gag gag gag	1144	
Lys Glu Gly Cys Tyr	Thr Asn Arg Met Tyr	Gln Arg Ala Glu Glu Glu		
217	222	227	232	
atc cag aag caa aca	caa gca atg caa gaa	ctc cac aga gtg gag ctg	1192	
Ile Gln Lys Gln Thr	Gln Ala Met Gln Glu	Leu His Arg Val Glu Leu		
233	238	243	248	
gag aga gag aaa gcg	cgg ata aga gag gag	tat gaa gag aaa atc aga	1240	
Glu Arg Glu Lys Ala	Arg Ile Arg Glu Glu	Tyr Glu Glu Lys Ile Arg		
249	254	259	264	
aag ctg gaa gat aaa	gtg gag cag gaa aag	aga aag aag caa atg gag	1288	
Lys Leu Glu Asp Lys	Val Glu Gln Glu Lys	Arg Lys Lys Gln Met Glu		
265	270	275	280	
aag aaa cta gca gaa	cag gag gct cac tat	gct gta agg cag caa agg	1336	
Lys Lys Leu Ala Glu	Gln Glu Ala His Tyr	Ala Val Arg Gln Gln Arg		
281	286	291	296	
gca aga acg gaa gtg	gag agt aag gat ggg	ata ctt gaa tta atc atg	1384	
Ala Arg Thr Glu Val	Glu Ser Lys Asp Gly	Ile Leu Glu Leu Ile Met		
297	302	307	312	
aca gcg tta cag att	gct tcc ttt att ttg	tta cgt ctg ttc gcg gaa	1432	
Thr Ala Leu Gln Ile	Ala Ser Phe Ile Leu	Leu Arg Leu Phe Ala Glu		
313	318	323	328	
gat taa acttaatgaa	aatctgtttg tattttctgc	atattctctg gcaaccttgc	1488	
Asp *				
329				

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 atg cca ctc cga att cat gtg cta ctt ggc cta gct atc act aca cta 288  
 Met Pro Leu Arg Ile His Val Leu Leu Gly Leu Ala Ile Thr Thr Leu  
 1 5 10 15  
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 Val Gln Ala Val Asp Lys Lys Val Asp Cys Pro Arg Leu Cys Thr Cys  
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 Glu Ile Arg Pro Trp Phe Thr Pro Arg Ser Ile Tyr Met Glu Ala Ser  
 33 38 43 48  
 aca gtg gat tgt aat gat tta ggt ctt tta act ttc cca gcc aga ttg 432  
 Thr Val Asp Cys Asn Asp Leu Gly Leu Leu Thr Phe Pro Ala Arg Leu  
 49 54 59 64  
 cca gct aac aca cag att ctt ctc cta cag act aac aat att gca aaa 480  
 Pro Ala Asn Thr Gln Ile Leu Leu Leu Gln Thr Asn Asn Ile Ala Lys  
 65 70 75 80  
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81					86					91					96	
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Pro	Gln	Leu	Leu	Ser	Val	Tyr	Leu	Glu	Glu	Asn	Lys	Leu	Thr	Glu	Leu	
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Pro	Glu	Lys	Cys	Leu	Ser	Glu	Leu	Ser	Asn	Leu	Gln	Glu	Leu	Tyr	Ile	
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Tyr Ile His Pro Asn	Ala Phe Phe Arg Leu	Pro Lys Leu Glu Ser Leu		
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Met Leu Asn Ser Asn	Ala Leu Ser Ala Leu	Tyr His Gly Thr Ile Glu		
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Ser Leu Pro Asn Leu	Lys Glu Ile Ser Ile	His Ser Asn Pro Ile Arg		
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Cys Asp Cys Val Ile	Arg Trp Met Asn Met	Asn Lys Thr Asn Ile Arg		
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Ala Gly Ser Tyr Val	Ser Phe His Cys Arg	Ala Thr Ala Glu Pro Gln		
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Pro Glu Ile Tyr Trp	Ile Thr Pro Ser Gly	Gln Lys Leu Leu Pro Asn		
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acc ctg aca gac aag	ttc tat gtc cat tct	gag gga aca cta gat ata		1680
Thr Leu Thr Asp Lys	Phe Tyr Val His Ser	Glu Gly Thr Leu Asp Ile		
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Asn Gly Val Thr Pro	Lys Glu Gly Gly Leu	Tyr Thr Cys Ile Ala Thr		
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Ser Phe Pro Gln Asp	Asn Asn Gly Ser Leu	Asn Ile Lys Ile Arg Asp		
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 atg agc ttc ggc ggc gcg gac gcg ctg ctg ggc gcc ccg ttc gcg ccg 4003  
 Met Ser Phe Gly Gly Ala Asp Ala Leu Leu Gly Ala Pro Phe Ala Pro  
 2 7 12 17  
 ctg cat ggc ggc ggc agc ctc cac tac gcg cta gcc cga aag ggt ggc 4051  
 Leu His Gly Gly Gly Ser Leu His Tyr Ala Leu Ala Arg Lys Gly Gly  
 18 23 28 33  
 gca ggc ggg acg cgc tcc gcc gct ggc tcc tcc agc ggc ttc cac tcg 4099  
 Ala Gly Gly Thr Arg Ser Ala Ala Gly Ser Ser Ser Gly Phe His Ser  
 34 39 44 49  
 tgg aca cgg acg tcc gtg agc tcc gtg tcc gcc tcg ccc agc cgc ttc 4147  
 Trp Thr Arg Thr Ser Val Ser Ser Val Ser Ala Ser Pro Ser Arg Phe  
 50 55 60 65  
 cgt ggc gca ggc gcc gcc tca agc acc gac tcg ctg gac acg ctg agc 4195  
 Arg Gly Ala Gly Ala Ala Ser Ser Thr Asp Ser Leu Asp Thr Leu Ser  
 66 71 76 81  
 aac ggg ccg gag ggc tgc atg gtg gcg gtg gcc acc tca cgc agt gag 4243  
 Asn Gly Pro Glu Gly Cys Met Val Ala Val Ala Thr Ser Arg Ser Glu  
 82 87 92 97  
 aag gag cag ctg cag gcg ctg aac gac cgc ttc gcc ggg tac atc gac 4291  
 Lys Glu Gln Leu Gln Ala Leu Asn Asp Arg Phe Ala Gly Tyr Ile Asp  
 98 103 108 113  
 aag gtg cgg cag ctg gag gcg cac aac cgc agc ctg gag ggc gag gct 4339  
 Lys Val Arg Gln Leu Glu Ala His Asn Arg Ser Leu Glu Gly Glu Ala  
 114 119 124 129  
 gcg gcg ctg cgg cag cag cag gcg ggc cgc tcc gct atg ggc gag ctg 4387  
 Ala Ala Leu Arg Gln Gln Gln Ala Gly Arg Ser Ala Met Gly Glu Leu  
 130 135 140 145  
 tac gag cgc gag gtc cgc gag atg cgc ggc gcg gtg ctg cgc ctg ggc 4435  
 Tyr Glu Arg Glu Val Arg Glu Met Arg Gly Ala Val Leu Arg Leu Gly  
 146 151 156 161  
 gcg gcg cgc ggt cag cta cgc ctg gag cag gag cac ctg ctc gag gac 4483  
 Ala Ala Arg Gly Gln Leu Arg Leu Glu Gln Glu His Leu Leu Glu Asp  
 162 167 172 177  
 atc gcg cac gtg cgc cag cgc cta gac gac gag gcc ccg cag cga gag 4531  
 Ile Ala His Val Arg Gln Arg Leu Asp Asp Glu Ala Arg Gln Arg Glu  
 178 183 188 193

gag gcc gag gcg gcg gcc cgc gcg ctg gcg cgc ttc gcg cag gag gcc	4579
Glu Ala Glu Ala Ala Ala Arg Ala Leu Ala Arg Phe Ala Gln Glu Ala	
194 199 204 209	
gag gcg gcg cgc gtg gac ctg cag aag aag gcg cag gcg ctg cag gag	4627
Glu Ala Ala Arg Val Asp Leu Gln Lys Lys Ala Gln Ala Leu Gln Glu	
210 215 220 225	
gag tgc ggc tac ctg cgg cgc cac cac cag gaa gag gtg ggc gag ctg	4675
Glu Cys Gly Tyr Leu Arg Arg His His Gln Glu Glu Val Gly Glu Leu	
226 231 236 241	
ctc ggc cag atc cag ggc tcc ggc gcc gcg cag gcg cag atg cag gcc	4723
Leu Gly Gln Ile Gln Gly Ser Gly Ala Ala Gln Ala Gln Met Gln Ala	
242 247 252 257	
gag acg cgc gac gcc ctg aag tgc gac gtg acg tcg gcg ctg cgc gag	4771
Glu Thr Arg Asp Ala Leu Lys Cys Asp Val Thr Ser Ala Leu Arg Glu	
258 263 268 273	
att cgc gcg cag ctt gaa ggc cac gcg gtg cag agc acg ctg cag tcc	4819
Ile Arg Ala Gln Leu Glu Gly His Ala Val Gln Ser Thr Leu Gln Ser	
274 279 284 289	
gag gag tgg ttc cga gtg agg ctg gac cga ctg tcg gag gca gcc aag	4867
Glu Glu Trp Phe Arg Val Arg Leu Asp Arg Leu Ser Glu Ala Ala Lys	
290 295 300 305	
gtg aac aca gac gct atg cgc tca gcg cag gag gag ata act gag tac	4915
Val Asn Thr Asp Ala Met Arg Ser Ala Gln Glu Glu Ile Thr Glu Tyr	
306 311 316 321	
cgg cgt cag ctg cag gcc agg acc aca gag ctg gag gca ctg aaa agc	4963
Arg Arg Gln Leu Gln Ala Arg Thr Thr Glu Leu Glu Ala Leu Lys Ser	
322 327 332 337	
acc aag gac tca ctg gag agg cag cgc tct gag ctg gag gac cgt cat	5011
Thr Lys Asp Ser Leu Glu Arg Gln Arg Ser Glu Leu Glu Asp Arg His	
338 343 348 353	
cag gcc gac att gcc tcc tac cag gaa gcc att cag cag ctg gac gct	5059
Gln Ala Asp Ile Ala Ser Tyr Gln Glu Ala Ile Gln Gln Leu Asp Ala	
354 359 364 369	
gag ctg agg aac acc aag tgg gag atg gcc gcc cag ctg cga gaa tac	5107
Glu Leu Arg Asn Thr Lys Trp Glu Met Ala Ala Gln Leu Arg Glu Tyr	
370 375 380 385	
cag gac ctg ctc aat gtc aag atg gct ctg gat ata gag ata gcc gct	5155
Gln Asp Leu Leu Asn Val Lys Met Ala Leu Asp Ile Glu Ile Ala Ala	
386 391 396 401	
tac aga aaa ctc ctg gaa ggt gaa gag tgt cgg att ggc ttt ggc cca	5203
Tyr Arg Lys Leu Leu Glu Gly Glu Glu Cys Arg Ile Gly Phe Gly Pro	
402 407 412 417	
att cct ttc tcg ctt cca gaa gga ctc ccc aaa att ccc tct gtg tcc	5251

Ile	Pro	Phe	Ser	Leu	Pro	Glu	Gly	Leu	Pro	Lys	Ile	Pro	Ser	Val	Ser	
418					423					428					433	
act	cac	ata	aag	gtg	aaa	agc	gaa	gag	aag	atc	aaa	gtg	gtg	gag	aag	5299
Thr	His	Ile	Lys	Val	Lys	Ser	Glu	Glu	Lys	Ile	Lys	Val	Val	Glu	Lys	
434					439					444					449	
tct	gag	aaa	gaa	act	gtg	att	gtg	gag	gaa	cag	aca	gag	gag	acc	caa	5347
Ser	Glu	Lys	Glu	Thr	Val	Ile	Val	Glu	Glu	Gln	Thr	Glu	Glu	Thr	Gln	
450					455					460					465	
gtg	act	gaa	gaa	gtg	act	gaa	gaa	gag	gag	aaa	gag	gcc	aaa	gag	gag	5395
Val	Thr	Glu	Glu	Val	Thr	Glu	Glu	Glu	Glu	Lys	Glu	Ala	Lys	Glu	Glu	
466					471					476					481	
gag	ggc	aag	gag	gaa	gaa	ggg	ggt	gaa	gaa	gag	gag	gca	gaa	ggg	gga	5443
Glu	Gly	Lys	Glu	Glu	Glu	Gly	Gly	Glu	Glu	Glu	Glu	Ala	Glu	Gly	Gly	
482					487					492					497	
gaa	gaa	gaa	aca	aag	tct	ccc	cca	gta	gaa	gag	gct	gca	tcc	cca	gag	5491
Glu	Glu	Glu	Thr	Lys	Ser	Pro	Pro	Val	Glu	Glu	Ala	Ala	Ser	Pro	Glu	
498					503					508					513	
aag	gaa	gcc	aag	tca	cca	gta	aag	gaa	gag	gca	aag	tca	ccg	gct	gag	5539
Lys	Glu	Ala	Lys	Ser	Pro	Val	Lys	Glu	Glu	Ala	Lys	Ser	Pro	Ala	Glu	
514					519					524					529	
gcc	aag	tcc	cca	gag	aag	gag	gaa	gca	aaa	tcc	cca	gcc	gaa	gtc	aag	5587
Ala	Lys	Ser	Pro	Glu	Lys	Glu	Glu	Ala	Lys	Ser	Pro	Ala	Glu	Val	Lys	
530					535					540					545	
tcc	cct	gag	aag	gcc	aag	tct	cca	gca	aag	gaa	gag	gca	aag	tca	ccg	5635
Ser	Pro	Glu	Lys	Ala	Lys	Ser	Pro	Ala	Lys	Glu	Glu	Ala	Lys	Ser	Pro	
546					551					556					561	
cct	gag	gcc	aag	tcc	cca	gag	aag	gag	gaa	gca	aaa	tct	cca	gct	gag	5683
Pro	Glu	Ala	Lys	Ser	Pro	Glu	Lys	Glu	Glu	Ala	Lys	Ser	Pro	Ala	Glu	
562					567					572					577	
gtc	aag	tcc	ccc	gag	aag	gcc	aag	tcc	cca	gca	aag	gaa	gag	gca	aag	5731
Val	Lys	Ser	Pro	Glu	Lys	Ala	Lys	Ser	Pro	Ala	Lys	Glu	Glu	Ala	Lys	
578					583					588					593	
tca	ccg	gcc	gag	gcc	aag	tct	cca	gag	aag	gcc	aag	tcc	cca	gtg	aag	5779
Ser	Pro	Ala	Glu	Ala	Lys	Ser	Pro	Glu	Lys	Ala	Lys	Ser	Pro	Val	Lys	
594					599					604					609	
gaa	gaa	gca	aag	tca	ccg	gct	gag	gcc	aag	tcc	cca	gtg	aag	gaa	gaa	5827
Glu	Glu	Ala	Lys	Ser	Pro	Ala	Glu	Ala	Lys	Ser	Pro	Val	Lys	Glu	Glu	
610					615					620					625	
gca	aaa	tct	cca	gct	gag	gtc	aag	tcc	ccg	gaa	aag	gcc	aag	tct	cca	5875
Ala	Lys	Ser	Pro	Ala	Glu	Val	Lys	Ser	Pro	Glu	Lys	Ala	Lys	Ser	Pro	
626					631					636					641	
acg	aag	gag	gaa	gca	aag	tcc	cct	gag	aag	gcc	aag	tcc	cct	gag	aag	5923
Thr	Lys	Glu	Glu	Ala	Lys	Ser	Pro	Glu	Lys	Ala	Lys	Ser	Pro	Glu	Lys	



ttc cga gtt cga gct gtg aat aaa atg gga ata ggt ttc cca tct cga	2052
Phe Arg Val Arg Ala Val Asn Lys Met Gly Ile Gly Phe Pro Ser Arg	
446 451 456 461	
gtt tcc gag gcc gtg gct gct ctg gat ccg gct gag aaa gct aga cta	2100
Val Ser Glu Ala Val Ala Ala Leu Asp Pro Ala Glu Lys Ala Arg Leu	
462 467 472 477	
aag tcg ccc ctc agc acc ctg gac tgg aca gtc att gtt act gaa gag	2148
Lys Ser Pro Leu Ser Thr Leu Asp Trp Thr Val Ile Val Thr Glu Glu	
478 483 488 493	
gaa cct tca gag ggt att gtg cct ggc ccc ccg aca gac ctc tct gtc	2196
Glu Pro Ser Glu Gly Ile Val Pro Gly Pro Pro Thr Asp Leu Ser Val	
494 499 504 509	
act gag gcc acc cgg agc tat gtg gtg ctc agc tgg aag ccc cct ggc	2244
Thr Glu Ala Thr Arg Ser Tyr Val Val Leu Ser Trp Lys Pro Pro Gly	
510 515 520 525	
cag cgt ggt cat gag ggc att atg tac ttt gtg gaa aag tgt gag gca	2292
Gln Arg Gly His Glu Gly Ile Met Tyr Phe Val Glu Lys Cys Glu Ala	
526 531 536 541	
gga aca gaa aac tgg cag cga gtg aac acg gag ctc cct gtg aag tct	2340
Gly Thr Glu Asn Trp Gln Arg Val Asn Thr Glu Leu Pro Val Lys Ser	
542 547 552 557	
ccc cgc ttt gct ctg ttt gac ttg gcc gag ggg aaa tcc tac tgt ttc	2388
Pro Arg Phe Ala Leu Phe Asp Leu Ala Glu Gly Lys Ser Tyr Cys Phe	
558 563 568 573	
cgt gtc cgc tgt tct aat tct gca gga gtt ggt gag ccc tca gag gca	2436
Arg Val Arg Cys Ser Asn Ser Ala Gly Val Gly Glu Pro Ser Glu Ala	
574 579 584 589	
acg gag gtg act gtg gta ggg gac aaa ctt gat atc ccc aag gct cct	2484
Thr Glu Val Thr Val Val Gly Asp Lys Leu Asp Ile Pro Lys Ala Pro	
590 595 600 605	
ggc aaa atc atc cca agc aga aac aca gac acc tca gtg gta gtt tcg	2532
Gly Lys Ile Ile Pro Ser Arg Asn Thr Asp Thr Ser Val Val Val Ser	
606 611 616 621	
tgg gag gag tcc aaa gat gcc aaa gag ctg gtc ggg tac tac ata gag	2580
Trp Glu Glu Ser Lys Asp Ala Lys Glu Leu Val Gly Tyr Tyr Ile Glu	
622 627 632 637	
gcg agc gtt gct ggc tct ggc aag tgg gag ccc tgt aac aac aac ccc	2628
Ala Ser Val Ala Gly Ser Gly Lys Trp Glu Pro Cys Asn Asn Asn Pro	
638 643 648 653	
gtg aag ggc tca cga ttc act tgt cat gga tta gtg act ggt cag agt	2676
Val Lys Gly Ser Arg Phe Thr Cys His Gly Leu Val Thr Gly Gln Ser	
654 659 664 669	
tat att ttc cgg gtc aga gca gtc aat gca gct gga ctt agt gaa tat	2724

Tyr Ile Phe Arg Val	Arg Ala Val Asn Ala	Ala Gly Leu Ser Glu Tyr	
670	675	680	685
tcc cag gat tca gaa gct att gaa gtc aaa gct gct att gca cca cca			2772
Ser Gln Asp Ser Glu Ala Ile Glu Val Lys Ala Ala Ile Ala Pro Pro			
686	691	696	701
tct cca ccc tgt gat atc acc tgt ctt gaa agt ttt cgt gac tca atg			2820
Ser Pro Pro Cys Asp Ile Thr Cys Leu Glu Ser Phe Arg Asp Ser Met			
702	707	712	717
gtt ctt gga tgg aag caa cca gat aag att gga ggg gca gaa att act			2868
Val Leu Gly Trp Lys Gln Pro Asp Lys Ile Gly Gly Ala Glu Ile Thr			
718	723	728	733
ggc tat tat gtg aac tat cgc gag gtc att gat ggg gta cca gga aaa			2916
Gly Tyr Tyr Val Asn Tyr Arg Glu Val Ile Asp Gly Val Pro Gly Lys			
734	739	744	749
tgg aga gaa gcc aat gtc aag gct gtc agt gag gag gca tac aag att			2964
Trp Arg Glu Ala Asn Val Lys Ala Val Ser Glu Glu Ala Tyr Lys Ile			
750	755	760	765
agc aac ttg aag gaa aac atg gtg tat cag ttc caa gtg gca gcc atg			3012
Ser Asn Leu Lys Glu Asn Met Val Tyr Gln Phe Gln Val Ala Ala Met			
766	771	776	781
aac atg gct ggg ctg ggc gcg ccc tcc gca gta agc gaa tgc ttc aaa			3060
Asn Met Ala Gly Leu Gly Ala Pro Ser Ala Val Ser Glu Cys Phe Lys			
782	787	792	797
tgt gaa gag tgg acc atc gcc gtc cca gga cca ccg cac agt ctc aag			3108
Cys Glu Glu Trp Thr Ile Ala Val Pro Gly Pro Pro His Ser Leu Lys			
798	803	808	813
tgt agt gaa gtc agg aaa gac tca ctg gtt ctc cag tgg aag ccg cca			3156
Cys Ser Glu Val Arg Lys Asp Ser Leu Val Leu Gln Trp Lys Pro Pro			
814	819	824	829
gtc cac tcc ggg cgg act ccg gtc act ggt tac ttc gtg gac ttg aag			3204
Val His Ser Gly Arg Thr Pro Val Thr Gly Tyr Phe Val Asp Leu Lys			
830	835	840	845
gag gcc aag gcc aaa gaa gac cag tgg cga ggg ctc aat gag gcg gct			3252
Glu Ala Lys Ala Lys Glu Asp Gln Trp Arg Gly Leu Asn Glu Ala Ala			
846	851	856	861
att aaa aac gta tac ctg aag gtt cga ggc ctc aag gag ggc gtc agc			3300
Ile Lys Asn Val Tyr Leu Lys Val Arg Gly Leu Lys Glu Gly Val Ser			
862	867	872	877
tac gtg ttc cgt gtt cga gcc ata aac cag gcg gga gtt ggg aag cca			3348
Tyr Val Phe Arg Val Arg Ala Ile Asn Gln Ala Gly Val Gly Lys Pro			
878	883	888	893
tct gac ctt gct ggc cct gtt gtg gca gag acc cgt cca gga acc aaa			3396
Ser Asp Leu Ala Gly Pro Val Val Ala Glu Thr Arg Pro Gly Thr Lys			

894	899	904	909	
gag gtt gtt gta aat gtg gat gat gat gga gtc att tca ttg aac ttc				3444
Glu Val Val Val Asn Val Asp Asp Asp Gly Val Ile Ser Leu Asn Phe				
910	915	920	925	
gag tgt gat aag atg act cca aag tcc gag ttc tcc tgg tcc aaa gat				3492
Glu Cys Asp Lys Met Thr Pro Lys Ser Glu Phe Ser Trp Ser Lys Asp				
926	931	936	941	
tat gta tcc act gag gac tct cca cga ttg gaa gtc gaa agc aag ggc				3540
Tyr Val Ser Thr Glu Asp Ser Pro Arg Leu Glu Val Glu Ser Lys Gly				
942	947	952	957	
aac aag acg aaa atg acc ttc aaa gac ctt ggg atg gat gac ttg ggt				3588
Asn Lys Thr Lys Met Thr Phe Lys Asp Leu Gly Met Asp Asp Leu Gly				
958	963	968	973	
att tac tct tgc gat gta aca gac act gat gga ata gca tca agc tac				3636
Ile Tyr Ser Cys Asp Val Thr Asp Thr Asp Gly Ile Ala Ser Ser Tyr				
974	979	984	989	
tta ata gat gag gaa gaa ttg aaa cgt tta ctt gct ctc agc cat gaa				3684
Leu Ile Asp Glu Glu Glu Leu Lys Arg Leu Leu Ala Leu Ser His Glu				
990	995	1000	1005	
cac aag ttc cca act gtc cca gtt aaa tca gag ttg gca gtt gaa att				3732
His Lys Phe Pro Thr Val Pro Val Lys Ser Glu Leu Ala Val Glu Ile				
1006	1011	1016	1021	
ttg gag aaa ggc cag gtc cgg ttt tgg atg cag gct gag aaa ctg tct				3780
Leu Glu Lys Gly Gln Val Arg Phe Trp Met Gln Ala Glu Lys Leu Ser				
1022	1027	1032	1037	
ggc aat gcc aaa gtc aac tac ata ttt aac gag aag gaa att ttt gaa				3828
Gly Asn Ala Lys Val Asn Tyr Ile Phe Asn Glu Lys Glu Ile Phe Glu				
1038	1043	1048	1053	
ggc ccg aaa tat aaa atg cat att gac cga aac act ggc atc atc gaa				3876
Gly Pro Lys Tyr Lys Met His Ile Asp Arg Asn Thr Gly Ile Ile Glu				
1054	1059	1064	1069	
atg ttc atg gaa aag cta cag gat gag gat gag gga acg tac act ttc				3924
Met Phe Met Glu Lys Leu Gln Asp Glu Asp Glu Gly Thr Tyr Thr Phe				
1070	1075	1080	1085	
cag ctt caa gat gga aaa gca act aac cat tct act gtt gtt ctc gtt				3972
Gln Leu Gln Asp Gly Lys Ala Thr Asn His Ser Thr Val Val Leu Val				
1086	1091	1096	1101	
gga gat gtt ttc aaa aag ctc cag aaa gaa gct gaa ttc cag cgg caa				4020
Gly Asp Val Phe Lys Lys Leu Gln Lys Glu Ala Glu Phe Gln Arg Gln				
1102	1107	1112	1117	
gaa tgg atc agg aaa caa ggt cct cac ttt gtt gag tat ttg agc tgg				4068
Glu Trp Ile Arg Lys Gln Gly Pro His Phe Val Glu Tyr Leu Ser Trp				
1118	1123	1128	1133	

gaa gtg act ggt gaa tgt aat gta cta ttg aaa tgc aag gtg gca aat	4116
Glu Val Thr Gly Glu Cys Asn Val Leu Leu Lys Cys Lys Val Ala Asn	
1134 1139 1144 1149	
att aag aag gag act cat att gtg tgg tac aaa gat gag agg gag ata	4164
Ile Lys Lys Glu Thr His Ile Val Trp Tyr Lys Asp Glu Arg Glu Ile	
1150 1155 1160 1165	
tca gtg gat gaa aag cat gac ttt aag gat ggt ata tgt acc ctg ctt	4212
Ser Val Asp Glu Lys His Asp Phe Lys Asp Gly Ile Cys Thr Leu Leu	
1166 1171 1176 1181	
ata aca gag ttt tcc aag aaa gat gct ggg att tat gaa gtt atc ctg	4260
Ile Thr Glu Phe Ser Lys Lys Asp Ala Gly Ile Tyr Glu Val Ile Leu	
1182 1187 1192 1197	
aaa gat gac cga gga aaa gat aag agc aga ctg aag ctt gtg gat gaa	4308
Lys Asp Asp Arg Gly Lys Asp Lys Ser Arg Leu Lys Leu Val Asp Glu	
1198 1203 1208 1213	
gcc ttt aag gaa ctg atg atg gaa gta tgc aaa aaa ata gct ttg tct	4356
Ala Phe Lys Glu Leu Met Met Glu Val Cys Lys Lys Ile Ala Leu Ser	
1214 1219 1224 1229	
gct aca gac ctg aaa atc cag agc aca gcc gag ggc atc caa ctg tac	4404
Ala Thr Asp Leu Lys Ile Gln Ser Thr Ala Glu Gly Ile Gln Leu Tyr	
1230 1235 1240 1245	
tct ttt gta act tac tat gtg gag gat ttg aaa gtt aac tgg tcc cac	4452
Ser Phe Val Thr Tyr Tyr Val Glu Asp Leu Lys Val Asn Trp Ser His	
1246 1251 1256 1261	
aat ggg tcc gcc att agg tac tca gac aga gtt aag acc ggg gtc act	4500
Asn Gly Ser Ala Ile Arg Tyr Ser Asp Arg Val Lys Thr Gly Val Thr	
1262 1267 1272 1277	
gga gag cag atc tgg cta caa atc aac gag ccc acc ccg aat gac aaa	4548
Gly Glu Gln Ile Trp Leu Gln Ile Asn Glu Pro Thr Pro Asn Asp Lys	
1278 1283 1288 1293	
ggg aag tat gtc atg gag ctc ttt gat ggc aaa act gga cat cag aag	4596
Gly Lys Tyr Val Met Glu Leu Phe Asp Gly Lys Thr Gly His Gln Lys	
1294 1299 1304 1309	
aca gtg gat ctc tct gga caa gca tac gat gag gct tat gct gaa ttc	4644
Thr Val Asp Leu Ser Gly Gln Ala Tyr Asp Glu Ala Tyr Ala Glu Phe	
1310 1315 1320 1325	
cag agg ttg aaa caa gct gcc att gcc gag aaa aat cgt gcc cgg gtg	4692
Gln Arg Leu Lys Gln Ala Ala Ile Ala Glu Lys Asn Arg Ala Arg Val	
1326 1331 1336 1341	
ttg gga ggt ctc cca gac gtg gtc acc atc cag gag ggg aag gcc ctt	4740
Leu Gly Gly Leu Pro Asp Val Val Thr Ile Gln Glu Gly Lys Ala Leu	
1342 1347 1352 1357	

642	647	652	657	
gcc aag tcc cca gag aag gaa gag gcc aag tcc cct gag aag gcc aag				5971
Ala Lys Ser Pro Glu Lys Glu Glu Ala Lys Ser Pro Glu Lys Ala Lys				
658	663	668	673	
tcc cca gtg aag gca gaa gca aag tcc cct gag aag gcc aag tcc cca				6019
Ser Pro Val Lys Ala Glu Ala Lys Ser Pro Glu Lys Ala Lys Ser Pro				
674	679	684	689	
gtg aag gca gaa gca aag tcc cct gag aag gcc aag tcc cca gtg aag				6067
Val Lys Ala Glu Ala Lys Ser Pro Glu Lys Ala Lys Ser Pro Val Lys				
690	695	700	705	
gaa gaa gca aag tcc cct gag aag gcc aag tcc cca gtg aag gaa gaa				6115
Glu Glu Ala Lys Ser Pro Glu Lys Ala Lys Ser Pro Val Lys Glu Glu				
706	711	716	721	
gca aag tcc cct gag aag gcc aag tcc cca gtg aag gaa gaa gca aag				6163
Ala Lys Ser Pro Glu Lys Ala Lys Ser Pro Val Lys Glu Glu Ala Lys				
722	727	732	737	
acc ccc gag aag gcc aag tcc cca gtg aag gaa gaa gcc aag tcc cca				6211
Thr Pro Glu Lys Ala Lys Ser Pro Val Lys Glu Glu Ala Lys Ser Pro				
738	743	748	753	
gag aag gcc aag tcc cca gag aag gcc aag act ctt gat gtg aag tct				6259
Glu Lys Ala Lys Ser Pro Glu Lys Ala Lys Thr Leu Asp Val Lys Ser				
754	759	764	769	
cca gaa gcc aag act cca gcg aag gag gaa gca agg tcc cct gca gac				6307
Pro Glu Ala Lys Thr Pro Ala Lys Glu Glu Ala Arg Ser Pro Ala Asp				
770	775	780	785	
aaa ttc cct gaa aag gcc aaa agc cct gtc aag gag gag gtc aag tcc				6355
Lys Phe Pro Glu Lys Ala Lys Ser Pro Val Lys Glu Glu Val Lys Ser				
786	791	796	801	
cca gag aag gcg aaa tct ccc ctg aag gag gat gcc aag gcc cct gag				6403
Pro Glu Lys Ala Lys Ser Pro Leu Lys Glu Asp Ala Lys Ala Pro Glu				
802	807	812	817	
aag gag atc cca aaa aag gaa gag gtg aag tcc cca gtg aag gag gag				6451
Lys Glu Ile Pro Lys Lys Glu Glu Val Lys Ser Pro Val Lys Glu Glu				
818	823	828	833	
gag aag ccc cag gag gtg aaa gtc aaa gag ccc cca aag aag gca gag				6499
Glu Lys Pro Gln Glu Val Lys Val Lys Glu Pro Pro Lys Lys Ala Glu				
834	839	844	849	
gaa gag aaa gcc cct gcc aca cca aaa aca gag gag aag aag gac agc				6547
Glu Glu Lys Ala Pro Ala Thr Pro Lys Thr Glu Glu Lys Lys Asp Ser				
850	855	860	865	
aag aaa gag gag gca ccc aag aag gag gct cca aag ccc aag gtg gag				6595
Lys Lys Glu Glu Ala Pro Lys Lys Glu Ala Pro Lys Pro Lys Val Glu				
866	871	876	881	

gag aag aag gaa cct gct gtc gaa aag ccc aaa gaa tcc aaa gtt gaa	6643
Glu Lys Lys Glu Pro Ala Val Glu Lys Pro Lys Glu Ser Lys Val Glu	
882 887 892 897	
gcc aag aag gaa gag gct gaa gat aag aaa aaa gtc ccc acc cca gag	6691
Ala Lys Lys Glu Glu Ala Glu Asp Lys Lys Lys Val Pro Thr Pro Glu	
898 903 908 913	
aag gag gct cct gcc aag gtg gag gtg aag gaa gac gct aaa ccc aaa	6739
Lys Glu Ala Pro Ala Lys Val Glu Val Lys Glu Asp Ala Lys Pro Lys	
914 919 924 929	
gaa aag aca gag gtg gcc aag aag gaa cca gat gat gcc aag gcc aag	6787
Glu Lys Thr Glu Val Ala Lys Lys Glu Pro Asp Asp Ala Lys Ala Lys	
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Lys Pro Lys Ala Glu Lys Ala Glu Lys Ser Ser Ser Thr Asp Gln Lys	
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 Pro Leu Lys Thr Gly Phe Leu His Asn Gly Arg Ala Met Gly Asn Met  
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 Asn Ile Asp Pro Ile Thr Met Ala Tyr Ser Leu Asn Ser Ser Ala Gln  
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 Glu Arg Leu Ile Pro Leu Gly His Ala Ser Lys Ser Ala Pro Met Asn  
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 Gly His Cys Phe Ala Glu Asn Gly Pro Ser Gln Lys Ser Ser Leu Pro  
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 Pro Leu Leu Ile Pro Pro Ser Glu Asn Leu Gly Pro His Glu Glu Asp  
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Cys Ala Pro Leu Cys	Glu Arg Gly Ser Arg	Pro Leu Pro Pro Leu Pro	
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Gln Ile Asn Tyr Ala	Tyr Phe Asp Thr Pro	Ala Val Ser Ala Ala Asp	
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Leu Ser Tyr Val Ser	Asp Gln Asn Gly Gly	Val Pro Asp Pro Asn Pro	
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cct cca cct cag acc	cac cga aga tta aga	agg tct cat tcg gga cca	949
Pro Pro Pro Gln Thr	His Arg Arg Leu Arg	Arg Ser His Ser Gly Pro	
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Ala Gly Ser Phe Asn	Lys Pro Ala Ile Arg	Ile Ser Asn Cys Cys Ile	
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cac aga gct tct cct	aac tcc gat gaa gac	aaa cct gag gtt ccc ccc	1045
His Arg Ala Ser Pro	Asn Ser Asp Glu Asp	Lys Pro Glu Val Pro Pro	
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Arg Val Pro Ile Pro	Pro Arg Pro Val Lys	Pro Asp Tyr Arg Arg Trp	
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Ser Ala Glu Val Thr	Ser Ser Thr Tyr Ser	Asp Glu Asp Arg Pro Pro	
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Ser Pro Lys Ser Leu	Pro Ser Tyr Leu Asn	Gly Val Met Pro Pro Thr	
334	339	344 349	
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Arg Gln Asn Ser Glu Gly Ser Ala Ser Lys Val Pro Cys Ile Leu Pro	
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Ile Ile Glu Asn Gly Lys Lys Val Ser Ser Thr His Tyr Tyr Leu Leu	
382 387 392 397	
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Pro Glu Arg Pro Pro Tyr Leu Asp Lys Tyr Glu Lys Phe Phe Arg Glu	
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Cys Gly Ile Ser Ser Ala Thr Glu Lys Pro Asp Ser Lys Thr Lys Met	
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Asp Leu Gly Gly His Val Lys Arg Lys His Leu Ser Tyr Val Val Ser	
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Ile Ala Gln Arg Asn Leu Leu Ala Ser Glu Glu Gly Ile Thr Thr Pro  
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Lys Gln Ser Thr Ala Ser Lys Gln Thr Thr Ala Ser Lys Gln Ser Thr  
46 51 56 61

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Ala Ser Lys Gln Ser Thr Ala Ser Lys Gln Ser Thr Ala Ser Arg Gln  
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ctt caa cag gaa gaa act tct gaa aag aag tca agg aaa gtt gtg att 996  
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Cys Leu Glu Ala Asn Lys Asp Tyr Ile Ile Ile Ser Trp Lys Gln Pro	
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Ala Val Asp Gly Gly Ser Pro Ile Leu Gly Tyr Phe Ile Asp Lys Cys	
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Glu Val Gly Thr Asp Ser Trp Ser Gln Cys Asn Asp Thr Pro Val Lys	
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